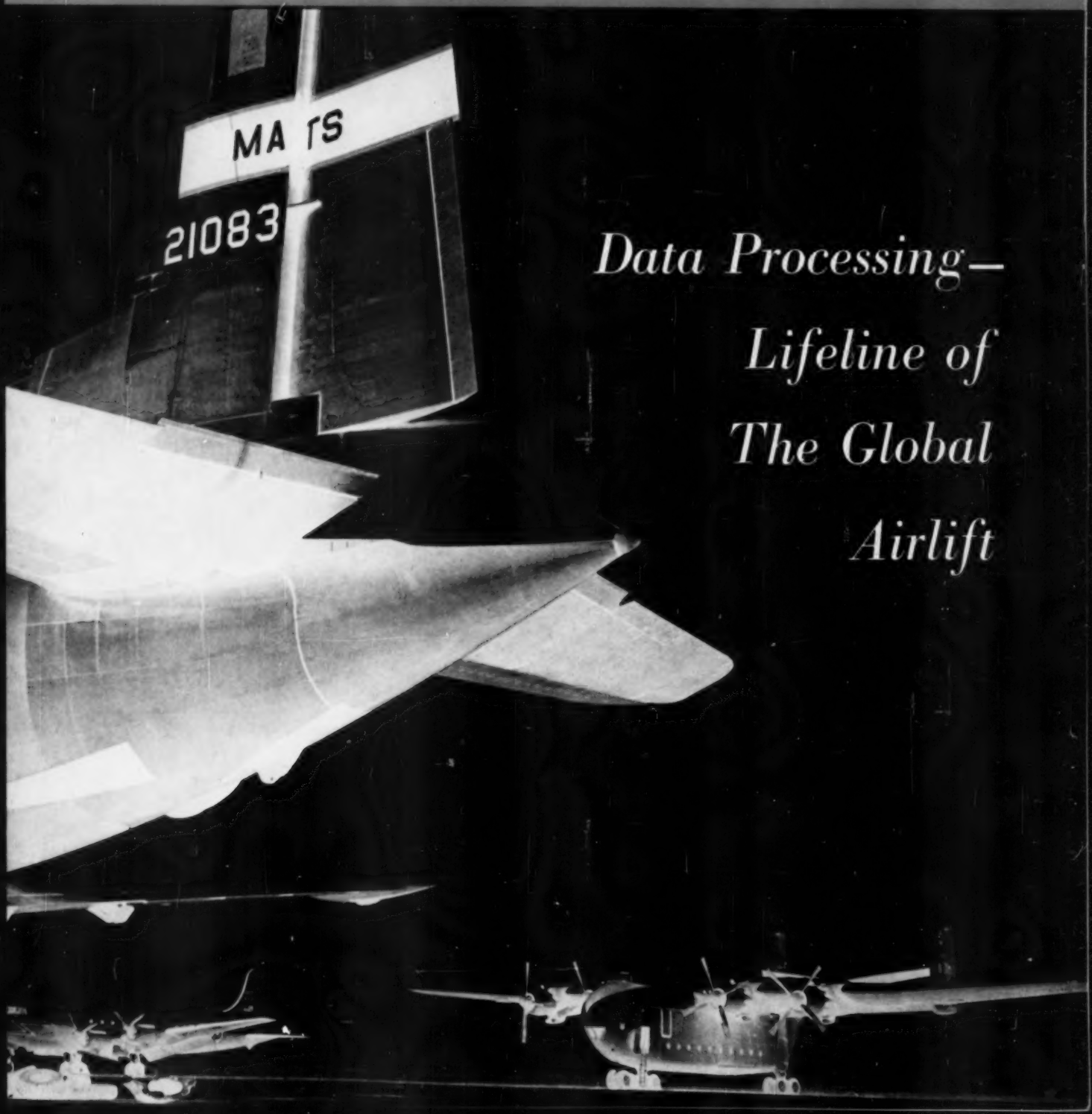
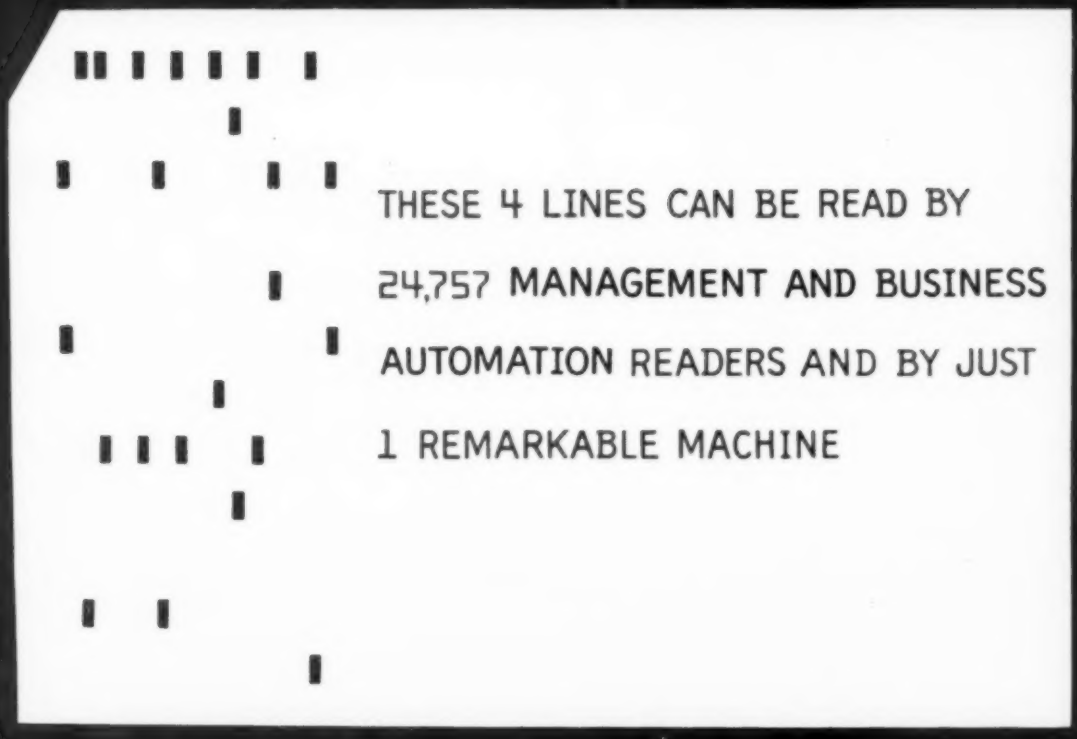
December 1960

MANAGEMENT *and* BUSINESS AUTOMATION



Data Processing— Lifeline of The Global Airlift



One machine—the Farrington Optical Scanner—can read what is written above. Both words and numbers, just as they are printed on this page. No special ink. No special paper.

Furthermore, the Farrington Optical Scanner (also known as the EYE) records what it reads. It translates written data into the language that automatic business machines and computers understand. Punched cards. Punched tape. Or computer tape. So quickly that one EYE can read and punch 100,000 cards per day.

The Farrington Optical Scanner actually "sees." Its video eye sweeps every character twenty-five times to pick out its identifying features. It recognizes digits, letters, and can even be programmed to identify a variety of symbols. Only the EYE reacts to visual impressions.

If you have three or more operators who read and punch, you can probably use an Optical Scanner to advantage. Only Farrington makes it.

Farrington Optical Scanners are now automating key-punch operations for companies like:

A.T.&T. NATIONAL BISCUIT COMPANY THE READER'S DIGEST STANDARD OIL CO. OF CALIFORNIA

For further information, write Farrington Electronics Inc., Needham Heights 94, Massachusetts

FARRINGTON®

For More Information Circle Reader Service Card No. 151

when she sits at the new Remington **KARD-VEYER**® filing unit!

The new Remington Rand Kard-Veyer Unit makes filing automatic . . . makes any girl in your filing department worth three times as much! A Kard-Veyer Unit delivers up to a half-million records to the operator at the touch of a button . . . enables her to file more than 1000 records per hour! The saving is substantial not only in time (money) but also in valuable floor space because a Kard-Veyer Unit concentrates the bulk of your files at a single convenient work station.

And ease of Kard-Veyer operation raises employee morale, reduces fatigue and virtually eliminates costly errors. This greater production and efficiency have made a remarkable improvement in customer service wherever Kard-Veyer Units are installed—leading banks, large loan companies and utilities . . . many other businesses large and small. Let a trained Remington Rand Systems Specialist show you how to do a faster, more effective filing job with fewer people—write Room 2110, 122 East 42nd Street, New York 17, N. Y.

Kard-Veyer is also available on a long or short term lease plan.

Remington Rand Systems
DIVISION OF SPERRY RAND CORPORATION

For More Information Circle Reader Service Card No. 152

Another year ends . . . and MAC Panel Company is sincerely appreciative of your patronage and looks forward to serving you again with precision products and new developments for your data processing installation □

MAC PANEL COMPANY □ High Point, North Carolina

MAC PANEL

Representatives throughout the United States, in Canada, Latin America and Europe

For More Information Circle Reader Service Card No. 153

MANAGEMENT *and* BUSINESS AUTOMATION

December, 1960
Vol 4, No. 6

New ideas, developments, applications, results, and the human impact of business automation in commerce, industry and government.

18 MATS—A Global Operation Backed By Data Processing
By Robert Minor

24 Atlantic City's 'Showcase for Service'
By Robert W. Hogg

30 New System Integrates Shell Oil Management Data
By J. W. Haslett and P. A. Kalb

36 Survey of Business Machines Executives' Compensation
By D. Ronald Daniel

42 Electrada Datacom—Electronic Display Link
An MBA Product Preview

44 IBM 1410—Powerful, Intermediate Computer
An MBA Product Preview

46 Two NCR Electronic Banking Systems
An MBA Product Preview

6 Scanning the Issue
8 Random Access
10 Publisher's Column
48 MBA Showcase
53 On Request
54 MBA News

Editor
Arnold E. Keller

Associate Editor
Robert Minor

Eastern Editor
Thom Grant

Assistant Editor
William Christian

Art Director
Leonard Schimek

Manager,
Service Bureau
Richard Johnson

•

Circulation Manager
William Kennefick

•

Editorial Consultant
Arthur Gould

•

Contributing Editor
R. Hunt Brown

•

Publisher
Charles W. Gilbert

Published by The
Office Appliance Co.
John A. Gilbert,
President

BPA

EDITORIAL OFFICES

600 W. Jackson Blvd.
Chicago 6, Illinois
DEarborn 2-3206

100 E. 42nd St.
New York, N. Y.
MUrray Hill 2-2373

MANAGEMENT and BUSINESS AUTOMATION is published monthly and © copyrighted 1960 by The Office Appliance Co., 600 W. Jackson Boulevard, Chicago 6, Illinois. Accepted as controlled circulation publication at Chicago, Illinois, and Lafayette, Indiana.

Subscription Rates: United States, one year, $5; two years, $8. Canada, one year, $6; two years, $10. Pan American and foreign, one year, $12; two years, $20. Single copies: U.S.—75c; all other countries—$1.50.

Change of Address: Send new and old addresses (preferably with an MBA label) including postal zone numbers, to Circulation Department, MANAGEMENT and BUSINESS AUTOMATION.
Receipt of changes by the 10th of the month will assure correct addressing of next issue.

Postmaster: Send notices to MANAGEMENT and BUSINESS AUTOMATION, 600 W. Jackson Boulevard, Chicago 6, Ill.

NEW **Self-Contacting Control Panels with Thumb-Pressure Cover Release!**

Easy off — Easy on — without removal of cover screw fasteners

Attractive, plastic-light VPC control panel covers are more durable than sheet metal. Will not corrode, bend, dent or conduct electricity. Additional VPC panel advantages include: unmatched clarity of characters . . . aluminum frame and contoured handle lightness . . . 24 hour shipping service . . . unconditional guarantee.

VPC

WRITE FOR COMPLETE DETAILS AND PRICES

VIRGINIA PANEL Corporation

Post Office Box 1106
WAYNESBORO, VIRGINIA

For More Information Circle Reader Service Card No. 154

for more information

. . . about new products, or items advertised in this issue, use the convenient reader's service card

The MANAGEMENT and BUSINESS AUTOMATION Service Bureau will forward your request to each manufacturer promptly, saving you time, effort and money.

This is an added free service for readers of

MANAGEMENT and BUSINESS AUTOMATION

Scanning the issue

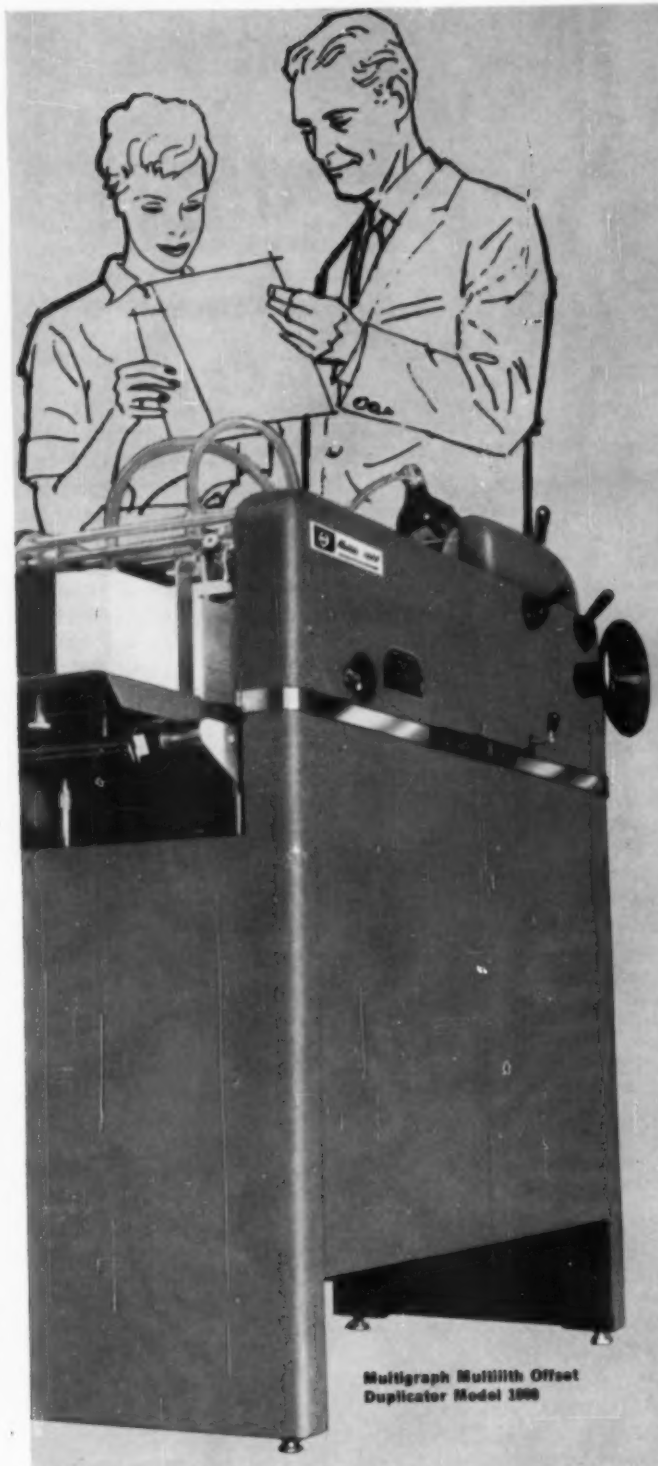
THE MEN of the Military Air Transport Service, headquartered at Scott Air Force Base, Ill., are justly proud of their command. Although a "teenager" in number of years of service, MATS has served well, from its "Baptism of Fire" during the Berlin Airlift in 1948, through more than a score of military and mercy missions.

Business automation has a key role in providing the vital records and reports which keep **MATS — A Global Operation Backed by Data Processing,** page 18, as a first line of our national defense. Its most recent humanitarian mission was the Amigos Airlift in May and June of this year when a total of 877 tons of clothing, food and medical supplies were flown to disaster-ridden Chile. One of the most unique missions was "Magic Carpet" in 1952 when MATS planes flew 75 times in four days carrying some 4,000 stranded Moslem pilgrims from Beirut, Lebanon, to Jidda, Saudi Arabia, closest airport to Mecca.

In its military capacity, MATS, since July, has been flying United Nations troops in and out of the troubled Congo. This month's cover is an on-the-spot photograph of airlift planes at the now-famous Leopoldville airport. It was here that the crew of a MATS plane was mauled and nearly killed by Congolese soldiers—proving that this can be a dangerous job, even in peacetime.

Atlantic City's "Showcase for Service," page 24, is the spanking new accounting and electronic data processing center recently constructed by Atlantic City Electric Co. in Pleasantville, N. J. Designed to accommodate a "decade of growth," the facility takes its place among the most modern of its kind. There are many advantages that automation will bring to the company. For one thing, it will open many new EDP jobs, at the same time eliminating routine chores that will now be automatic. The company foresees a new security for all employes that will come with growth, efficiency and long range prosperity. Atlantic City also envisions new kinds of service to customers, and it is participating in the atomic energy program, in electric car development, electrical heating for homes and similar developments.

Shell Oil Co., one of the nation's largest users of data processing equipment, has also been a consistent leader in systems development. This is due in no small part to an aggressive methods and procedures staff headed by one of the pioneers in the systems field, Jack Haslett. Jack is familiar to MBA readers as a member of the first round-table panel (Dec. '59) and as author of "A New Role for the Systems Man," (Feb. '60). An exciting new systems concept is reported by Jack and co-author, Paul Kalb, in **New System Integrates Shell Oil Management Data,** page 30.



Multigraph Multilith Offset Duplicator Model 1000

A NEW, ECONOMY-PRICED, ALL-PURPOSE OFFSET DUPLICATOR

Multilith®

MODEL 1000

Compact—designed for big production, yet occupies less space than a secretary's desk. Handles up to 1000 20-lb. sheets without reloading.

Self-contained—storage space for masters, papers and other supplies. No stands or special tables required.

Economy-priced—with many features never before offered in low-cost offset duplicators.

Quality copies—up to 110 per minute! All reproductions, including halftones, are clear, sharp and permanent.

The new Model 1000 is so flexible it meets ALL general duplicating requirements. Low in price, simple to operate. Pays its way many times over in businesses and associations of every size and description. Contact your nearby Multigraph Branch Office for complete details or write Addressograph-Multigraph Corporation, 1200 Babbitt Road, Cleveland 17, Ohio.

®Trade-Mark

METHODS

Addressograph-Multigraph

CUTTING COSTS IS OUR BUSINESS

For More Information Circle Reader Service Card No. 156

We're proud of the mechanical accuracy of the Friden fully automatic calculator. *But neither it nor any other calculator can get a right answer from a wrong entry.*

The calculator that allows the smallest margin for operator error will actually prove to be the most accurate.

The Friden SBT requires fewer manual keystrokes, fewer operator decisions than any other calculator on the market.* *In terms of day-to-day output, this makes it the most accurate calculator you can buy.*

For a no-obligation, ten-minute demonstration of "The Thinking Machine of American Business," call your Friden man or write: Friden, Inc., San Leandro, California.

**This is PRACTIMATION: automation so hand-in-hand with practicality there can be no other word for it.* © 1960 FRIDEN, INC.

Friden Creates A New World For Business®

Friden

FRIDEN, INC., SALES, INSTRUCTION, SERVICE THROUGHOUT THE U.S. AND THE WORLD.

Circle Reader Service Card No. 157

RANDOM ACCESS

Information bits from the Editor's memory file

Report From Moscow on Data Processing

We have reviewed with interest, and with skepticism, a report on the first All-USSR Conference on Mechanizing the Work of Designers, Engineers, Technicians and Clerical Personnel, held in Moscow last June. The report states that some 10 million people are employed in engineering administration and office work in the Soviet Union, and that approximately 3,500 electronic computers are in use. Most of the latter are evidently for scientific purposes, as the report mentions that, "Soon, quantity production will be started of high-capacity electronic computers for bookkeeping, statistical, economic planning and designing work."

A number of organizations and enterprises, however, are reported to employ computers in production, planning and accounting functions. Example: "Computers at the Rostov agricultural machinery works have reduced calculations in materials and wage bookkeeping by 90-94 percent." Computers are said to have extensive use on the Soviet railways, which now have in operation "more than 60 machine-accounting and machine bookkeeping stations, handling up to 50 percent of all the documents of operational and statistical accounting." In the next five years the Soviet is expected to establish computing centers for all the country's railways.

The USSR has established 164 computer stations at regional, territorial and republic statistical administrations, which processed the 1959 census. By the end of 1965, the number of computers in use is expected to triple. This will make possible the switch to material production of "one-fifth of present accounting personnel, yielding a saving of about two billion rubles, or as much as the total cost of all the computers that will be produced under the present seven-year plan."

Planning bodies and enterprises in the USSR are organizing large-scale output of primary bookkeeping facilities, as well as the receipt of primary information, its processing and transmission to administrative centers. Nineteen new types of this equipment, totalling some two million units, are being launched as part of the seven-year plan, the report says.

"With the output of computers expanding," says the author of the report, Y. Maksarev, vice chairman, USSR State Scientific-Technical Committee, "more than a thousand new calculating machine stations, several hundred computing centers and some 4,000 calculating machine bureaus will be opened in the course of these seven years."

Mr. Maksarev's report concludes with this note: "Some 40 percent of accounting, economic planning and engineering calculations (reckoned by the number of employes) in industry, the building trades, the transport services, trade and other branches of the national economy, as well as 60 percent of designing and drafting, will be mechanized and automated by 1965."

Now in one split-wired printing on your data processing equipment you can imprint 2 and 3 identical sets of labels to address follow-up mailings, identify different sets of forms and documents for inventory and warehouse controls — ledger accounts — addressing of incoming and outgoing accounts.

This AUTOMATION/LABELATION DOUBLE and TRIPLE "split-wired" innovation by **allen hollander** permits data processing equipment to print the same information simultaneously, side by side, cutting machine time 50% with DOUBLE and 66⅔% with TRIPLE labels.

able-stik DOUBLE and TRIPLE Pin Feed Labels come in multiple perforated widths, so they can be easily broken apart after printing and can be affixed manually or mechanically (with the able-stik 2-Way Dispenser).

Check these time-saving and economy-production features of **able-stik** Pin Feed Labels:

- ***Fanfolded — feed into machine right from box***
- ***Refold automatically without manual operations***
- ***Superior non-smudge surface gives clear reading impressions***
- ***Unbroken jumbo pack with no missing labels gives longer runs***
- ***Rewinding is eliminated by simple pack-flipping operation***
- ***Precision punched sprocket holes feed smoothly and uniformly***
- ***No hangnails or confetti to jam costly machinery***
- ***Store 75% more labels in former shelf space***

allen hollander company, inc.

385 Gerard Avenue, New York 51, N. Y.

Sales Offices:
Boston, Chicago, Detroit, Philadelphia, Cleveland

Factories: New York, Cleveland

0-979

...Save...

50% to 66⅔% MACHINE TIME

with NEW able-stik DOUBLE and TRIPLE PIN FEED pressure-sensitive LABELS!

DOUBLE or TRIPLE sets of labels may now be run on machines using split-wire printing.

allen hollander company, inc. **Dept. MBA**
385 Gerard Avenue, New York 51, N. Y.

Send me free Portfolio of Data Processing label Ideas

Name_____

Title_____

Company_____

Address_____

City_____ **Zone**____ **State**_____

For More Information Circle Reader Service Card No. 158

Overhead goes down when data cards go 'round!

acme visible rotaries

...spin nearly a quarter-million 5 x 3 consumer credit cards to users fingertips — at Broad Street Trust Company of Philadelphia. Reference data moves... but the workers do not. Result: Faster customer service. Employee fatigue reduced. Precious floor space freed. **Send coupon to see** how Acme Visible Rotaries soon pay for themselves!

ACME VISIBLE

ACME VISIBLE RECORDS, INC.
7412 West Allview Drive, Crozet, Va.

Please send information showing examples of many types and sizes of power and manual Rotaries now used by firms in many fields.

NAME_____ TITLE_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

Circle Reader Service Card No. 139

from the

Publisher's Desk

WE ARE delighted to tell MBA's readers that our publishing company will acquire the assets of Automation Consultants, Inc. and Automation Publishers, Inc., New York City, as of December 31, of this year.

Many readers are subscribers of the various services published by the companies and are well acquainted with the founder and editor, R. Hunt Brown. The first service originated by "Dick" Brown, back in 1954, was *Office Automation*. To this was added a monthly updating service. This combination is generally regarded as the No. 1 authority on automation and data processing hardware.

A natural outgrowth of Brown's efforts brought about *Office Automation Applications* in 1956, dealing with detailed case histories of outstanding installations in commerce, industry, and government. Since OAA, a series of seven handbooks have beeen added, dealing with automation in specific industries. Both OAA and the industry handbooks have monthly updating services to provide subscribers with up-to-the-minute information.

Still another service is the *Office Automation News Bulletin* which reports on vital events taking place with the companies and people concerned with automation and data processing.

R. Hunt Brown will continue to serve as Managing Editor of these handbooks and updating services during a transition period. He then will take up his favorite occupation of consulting and will assist us as a technical consultant for the handbooks and as a Contributing Editor of MBA.

The acquisition of these publications provides us with a complete publishing service for all executives interested in business automation. It will also broaden the scope of research for MBA, enabling Editor Arnold Keller and his staff to bring you important new editorial presentations in the months ahead.

Charles W. Gilbert

MANAGEMENT and BUSINESS AUTOMATION

Publisher,
Charles W. Gilbert

Manager, Marketing Services,
Stanley Roy

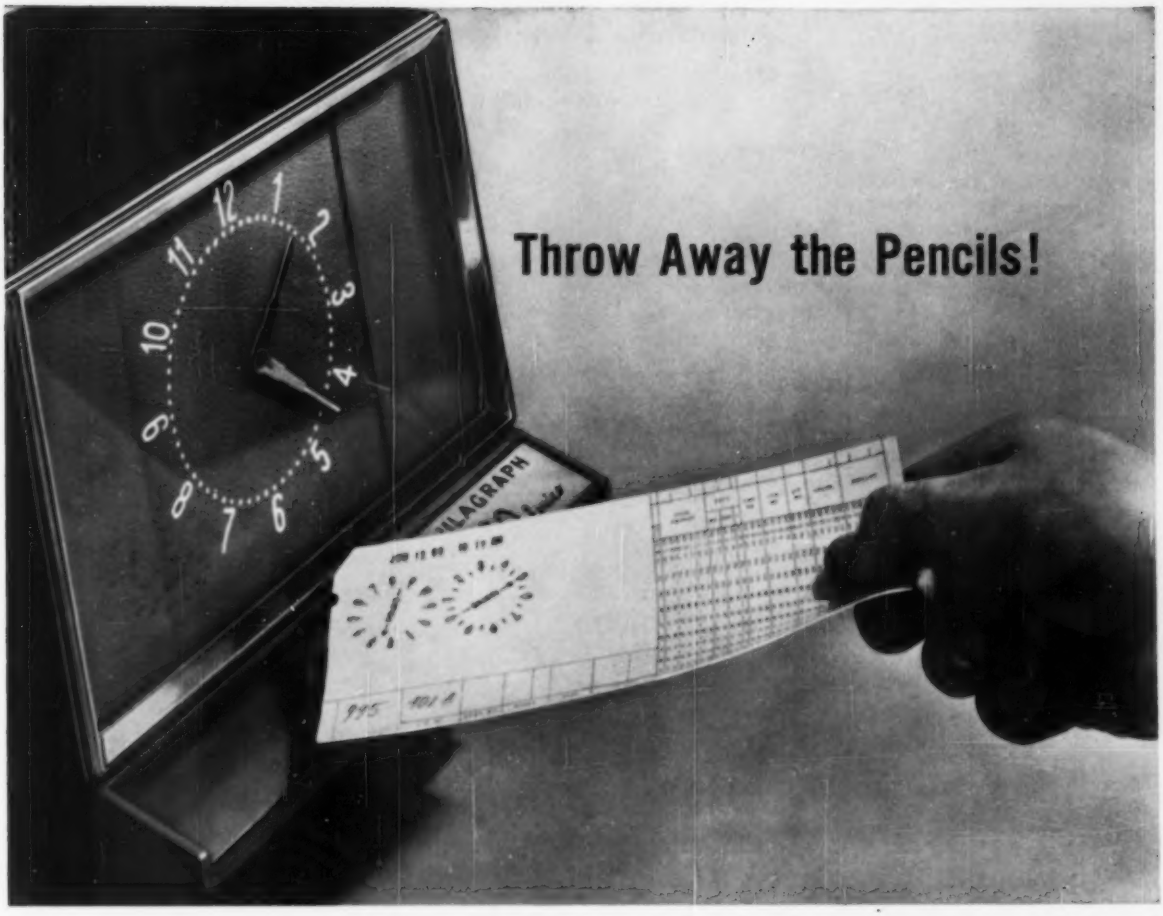
Production Manager,
Mary Haley

Treasurer,
Richard M. Daugherty

ADVERTISING REPRESENTATIVES: **New York City** — Robert Slocum, Wallace W. Fisher, Monty Cumming, Jr., 100 E. 42nd St., New York 17, N. Y. Phone MUrray Hil' 2-2373

Chicago—Herbert L. Sime, vice-president, Jack McDonald, 600 W. Jackson Blvd., Chicago 6, Ill. Phone DEarborn 2-3206

Los Angeles—Dillenbeck-Gallivan, Inc., 226 S. Alexandria Ave., Los Angeles 4, Calif. Phone DUnkirk 5-3991.



Calculagraph 500 Series automatically computes actual labor time — eliminates error-ridden manual methods.

Your data collection system can be greatly simplified and attain greater accuracy with the new 500 Series Calculagraph because this completely new computing time recorder, based on the time-tested Calculagraph principle, computes as well as prints the actual time worked on any given production job. There are no complicated levers or buttons to set. The 500 Series makes the decisions. Production workers merely insert job cards at the "start" and "finish" of the job. The 500 Series does the rest. The actual time worked, with nonworking periods automatically deducted, is printed on the job card and ready for processing.

The 500 Series dovetails easily with any internal data processing system or outside service center. In smaller systems where the volume does not justify the use of machine accounting, this new computing time recorder can be a system in itself.

Investigate this new 500 Series now. Write or call for more details and, if possible, send us samples of your job cards for analysis.

INDUSTRIAL DIVISION

CALCULAGRAPH Company

280 Ridgedale Avenue, Hanover, New Jersey

For More Information Circle Reader Service Card No. 160

An MBA News Feature

Emphasis on EDP At International Systems Meeting

A shortcut in panel wiring is demonstrated by Jack Brooks, seated, to Harry Shulman and Harry Tambor, both of Mylan Manufacturing Co. The demonstration took place during the ISM exhibition hours at the Clarkson Press Inc. booth.

The men behind the successful ISM meeting. Here Charles Schick, left, chairman of facilities, goes over the program with Charles Shaefer, general chairman.

By Thom Grant

AN OVERFLOW CROWD of over 1,300 representatives of business and industry turned out for the 13th annual International Systems Meeting of the Systems and Procedures Association, held in New York at the Commodore and Biltmore Hotels, October 10 thru 13. Attendance nearly doubled average registration of the last three years and easily passed last year's figure of 800 registrants.

A wide variety of products, with emphasis on electronic data processing and communication equipment, were displayed by 26 exhibitors from United States and Canada.

Commenting on the record-breaking attendance, Keith DeLashmutt, SPA president, said that the sessions had more than fulfilled their intent of stimulating, creating and sustaining enthusiasm for the systems and procedures profession. He pointed out that interest in the management seminars, which included such subjects as: "What Should Management Gain From Systems" and "The Role of the Systems Manager in Executive Function," necessitated six repeats of the seminar program.

Charles E. Grody, general auditor of New York Life Insurance Co., and Gilbert Jones, president, Data Processing Div., IBM Corp., were speakers at the Monday and Wednesday luncheons.

Regional winners of "Man of the Year" awards were: Mr. Wallace M. Carithers, assistant controller, A. B. Dick Co., charter member of the Windy City (Chicago) Chapter, region 2; and Richard A. Gilbert, operating manager, Automation Center, McDonnell Aircraft Corp., St. Louis, charter member of the St. Louis Chapter, region 3.

Highlight of the closing banquet ceremonies was the presentation of the annual "Systems Man of the Year Award," which went to Dr. Gibbs Myers, manager of Systems and Procedures, Kearfott Div., General Precision, Inc., Little Falls, New Jersey. The international award includes an inscribed plaque and citation plus a check for $1,000.

Dr. Myers, who holds an A.B. and A.M. degree from the University of Maryland, and a Ph.D. from Yale, is a charter member of the Northern New Jersey Chapter. He is active in systems research; has authored numerous articles, including "A Handbook for Business and Industry," edited by Victor Lazzaro (Prentice-Hall, 1959); and has developed two courses on systems, which are now established at Rutgers University.

The 1961 International Meeting will be held in Cleveland, October 9 through 11.

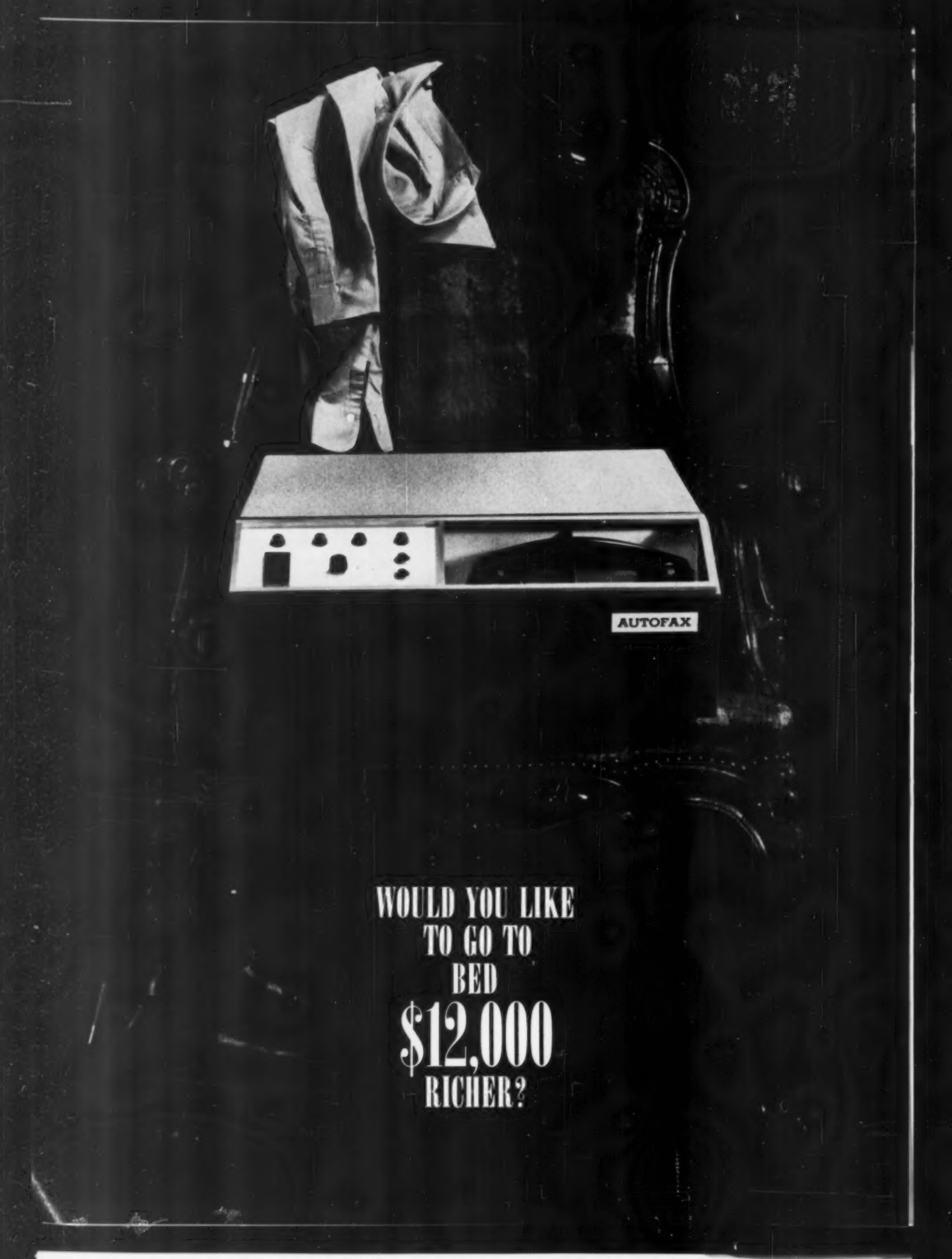
William Carr, left, of Automation Consultants, New York City, is picking up the full story on National Cash Register Company's new 304 computer system. Explaining the details is Bud Abbott, right, an NCR representative at the ISM exhibit.

Socony Mobil Oil representatives Dan Spricer, left, and A. T. Wacker, manager of Communications Division, scrutinize a Western Union system demonstrated by Gloria Morgan.

The SPA "Systems Man of the Year" award went to Dr. Gibbs Myers, systems and procedures manager for the Kearnfott Division of General Precision, Inc., Little Falls, N. J.

Roy Morris, Office Administration, left, gets a full description of the Stromberg transacter system from Eugene Miltner. J. R. Draper, Jr., also of General Time Corp., gives John McLaughlin, extreme right, of Shaw Walker Co. another picture of the system.

Checking out the program between sessions are, left to right, Charles Shafer, general chairman; Carlton Sweet; George Garnsey of the National City Bank in Cleveland, and William Feeney, major presentations program chairman.


AUTOFAX
WOULD YOU LIKE
TO GO TO
BED
$12,000
RICHER?

NEW
AUTOFAX
COMMUNICATIONS
SYSTEM

will save a midwest furniture chain twelve thousand wonderful dollars. Here's how:

Before AUTOFAX, the retailer labored with conventional, out-dated data processing. Result: Sales checks with too many errors; lost mail; un-met delivery dates; half-full trucks. Space was running out. And people were hired to keep tab on people.

Sales processing was a precarious matter: Invoices went from the salesmen in each store to section managers, to the service building (via truck), to the mail clerk, billing clerk, shipping clerk and, finally, to the inventory control personnel.

AUTOFAX changes all that. Now the salesman gives the invoice to a store control typist who checks it for accuracy. She types a file copy and punches a paper tape simultaneously on the FLEXO-WRITER. The tape is transmitted by AUTOFAX over telephone wire to the AUTOFAX in the main office building and automatically fed into another FLEXO-WRITER, which makes copies for billing and shipping and also prepares a tape for an inventory control computer.

Once the sale is typed, salescheck processing is fully automatic and errorless. And, at the end of each day you know exactly what's been sold, what's left, and how much money was made.

Not only does AUTOFAX do a better job in less time and less space, but because it requires fewer people and fewer machines, it will save this firm $12,000 a year.

If you have to transmit records or data from place to place and you'd like to sleep better at night, call or wire:

COMMUNICATIONS CONTROL CORP.
14707 Keswick St • Van Nuys, California
Circle Reader Service Card No. 161

Letters

Dear Sir:

The article in your September, 1960, issue on Optical Scanning is by far the most thorough we have discovered while investigating this field. By backing your broad explanation with specific systems applications, many purported technical representatives compliment your publication highly by displaying this issue during their presentation.

While working as a senior systems engineer for the last ten years there have been many instances when coverage on up-coming equipment — such as your publication provides—would have been helpful.

Bruce Van Scoter
Planning Department
Federal Reserve Bank of Chicago

Dear Sir:

I am writing in reference to the editorial appearing in the October, 1960, issue of your publication, "Salute to SPA." As publicity chairman for the Philadelphia Chapter of the Systems and Procedures Association, I would like permission to obtain reprints of that editorial for promotional purposes.

E. Hewitt

Dear Sir:

The Civil Service Commission is sponsoring a two-day seminar designed to further the acquaintance of top career executives with management uses and potentialities of automatic data processing; its costs, advantages and its impact on management.

One of the ways in which we seek to accomplish this objective is to make available to participants, selected readings in ADP. May we have your permission to reproduce the following article: "National Survey of Computer Department Salaries," MBA, June, 1960?

Edward A. Kieloch
Office of Career Development
U. S. Civil Service Commission

Dear Sir:

We have read with a great deal of interest your article on Rocketdyne's integrated data processing system. This article is of particular interest to us at Hanford, since we are in the development stages of just such a system.

We would appreciate it very much if you would give us permission to reprint the article for our internal use.

L. W. Herford
Manager, Office Procedure
Hanford Atomic Products Operation

Dear Sir:

At a recent Board of Directors' meeting of the Northeastern Wisconsin Chapter of the N.M.A.A., one member of the board presented his views on a recent article written by Ida Russakoff Hoos.

We had received permission from the Harvard Business Review to reproduce copies of Miss Hoos' article to pass out to our membership. However, I recalled your editorial on the same subject and it has been agreed that we would pass out Miss Hoos' article but at the same time, we would like to pass out copies of your editorial. We firmly believe that our membership, which is directly connected with EDP, should see both sides of this article.

The main reason for this letter is then, first to thank you for voicing your opinion on a matter that needs more attention, and secondly, to ask permission to reproduce your editorial and circulate it among our 75 members.

Jerome E. Schueler
President Northeastern Wisconsin Chapter N.M.A.A.

Ed. Note: Permission granted in all cases.

Dear Sir:

I have been receiving the MBA publication since its preview in 1958. Our feelings are very high on this publication, in fact we feel it is a better publication than our own "Journal of Machine Accounting."

J. P. Sachen
Machine Accounting Manager
Elgin National Watch Co.

Dear Sir:

We are about to print a news-

Continued on Page 16

Letters

Continued from page 15

paper that will be distributed within our offices. A cartoon was submitted to us which appeared in your March 1959 issue of MBA.

We desire to reproduce this cartoon for our paper and would appreciate your granting us permission to do so.

Rhoda Radwin
J. K. Lasser & Co.

Dear Sir:

I would appreciate receiving a copy of your interesting article entitled: "Optical Scanning—An Unlimited Horizon," which appeared in the September issue for MBA.

J. S. Aronofsky, Manager
Electronic Computer Center
Socony Mobil Oil Co., Inc.

Dear Sir:

In the October issue of MBA, there was an article on the Univac computer, entitled, "Electronics for the Lonely Heart" (Random Access, page 8); however, there was no address for the S/R Research Corp. Would you please send me the correct address by return mail.

Marie V. Sarasin

Ed. Note: To Miss Sarasin and other lonely hearts, who might be interested: 27 year old Mr. Robert Dempsey's address and that of the S/R Corp. is simply Peoria, Illinois.

Dear Sir:

I received my first issue of MBA and must say that I was deeply impressed with its scope and magnitude in helping keep management abreast of the automation field. It is one of the best publications along this line that I have had an opportunity to read. I will be eagerly awaiting each succeeding issue.

In the meantime, I notice from some of the letters published that you undoubtedly had a very interesting article in your September 1960 issue entitled "Optical Scanning—An Unlimited Horizon." With the importance that is being placed on the optical scanning method of data retrieval, I would like very much to receive a copy or a reprint of that article.

Eldon C. Wiese
Data Processing Systems Engineer
Moore Business Forms, Inc.

HOW PHILCO'S KEEPS

PHILCO'S 8-STUB TICKET — shown actual size — provides 5 sources of data for automatic processing of Daily Reports of: Production Count by Model and Type, Production vs. Warehouse Receipts, Warehouse Inventory by Model and Location, Shipments by Model, Relief of Inventory and Sales by Model. The other three stubs, permanently attached to each set and its carton, make identification quick, easy and accurate.

UNIQUE CONTROL SYSTEM 93% CLOSER TRACK OF TV SETS

THE HEART OF PHILCO'S SYSTEM is the Finished Goods Control Center, directed by Walter Wagg. Here, large quantities of tickets are processed by Dennison Print-Punch Machines to provide the multiple checks which keep close tabs on Philco TV sets. Here, too, stubs are counted and matched when returned from production, warehousing and shipping departments.

EACH STUB TELLS THE TRUTH! From production through shipping and everywhere in between, the disciplined removal and matching of Dennison Print-Punch Ticket stubs compiles an accurate history of each TV set's movement and location.

"Lost" TV sets used to be a Philco problem. "Paper losses" were not uncommon. They were caused by misprinted, mislaid or misread tags. Since 1956, however, all that has been changed. Annual inventory losses have been reduced by 93% to 96% . . . thanks to a Dennison Print-Punch System.

Now . . . accurate finished goods control is automatic! Production receives its daily supply of 8-stub Print-Punch tickets. Three stubs remain attached to each set and its carton and identify it until sold at retail. The other five stubs, removed at pre-determined points, are automatically processed to provide an accurate history of the set's movement and location. According to Walter Wagg, in charge of the system since its start, "Results are excellent . . . errors are few and easily corrected . . . inventory control is very reliable."

For complete details about Philco's system . . . and other cost-cutting Dennison Print-Punch applications . . . write for our fact-packed brochure. Or, contact the Dennison sales office nearest you.

Dennison

Helping you compete more effectively

FRAMINGHAM, MASSACHUSETTS

For More Information Circle Reader Service Card No. 163

A world-wide data processing network provides vital records and reports to keep the planes of the Military Air Transport Service flying "D-Day Ready Every Day."

MATS—A Global Operation Backed by Data Processing

By Robert Minor

WHETHER they are carrying combat-ready United Nations troops to the Congo, clothing, food and medical supplies to Chile or Thor missiles from California factories to launching bases in England, the planes of the Military Air Transport Service (MATS) are flying every day of the year. They are ready to move military personnel or strategic cargo to any point in the free world, or they can fly a mission of mercy to help the sick, the injured or the helpless.

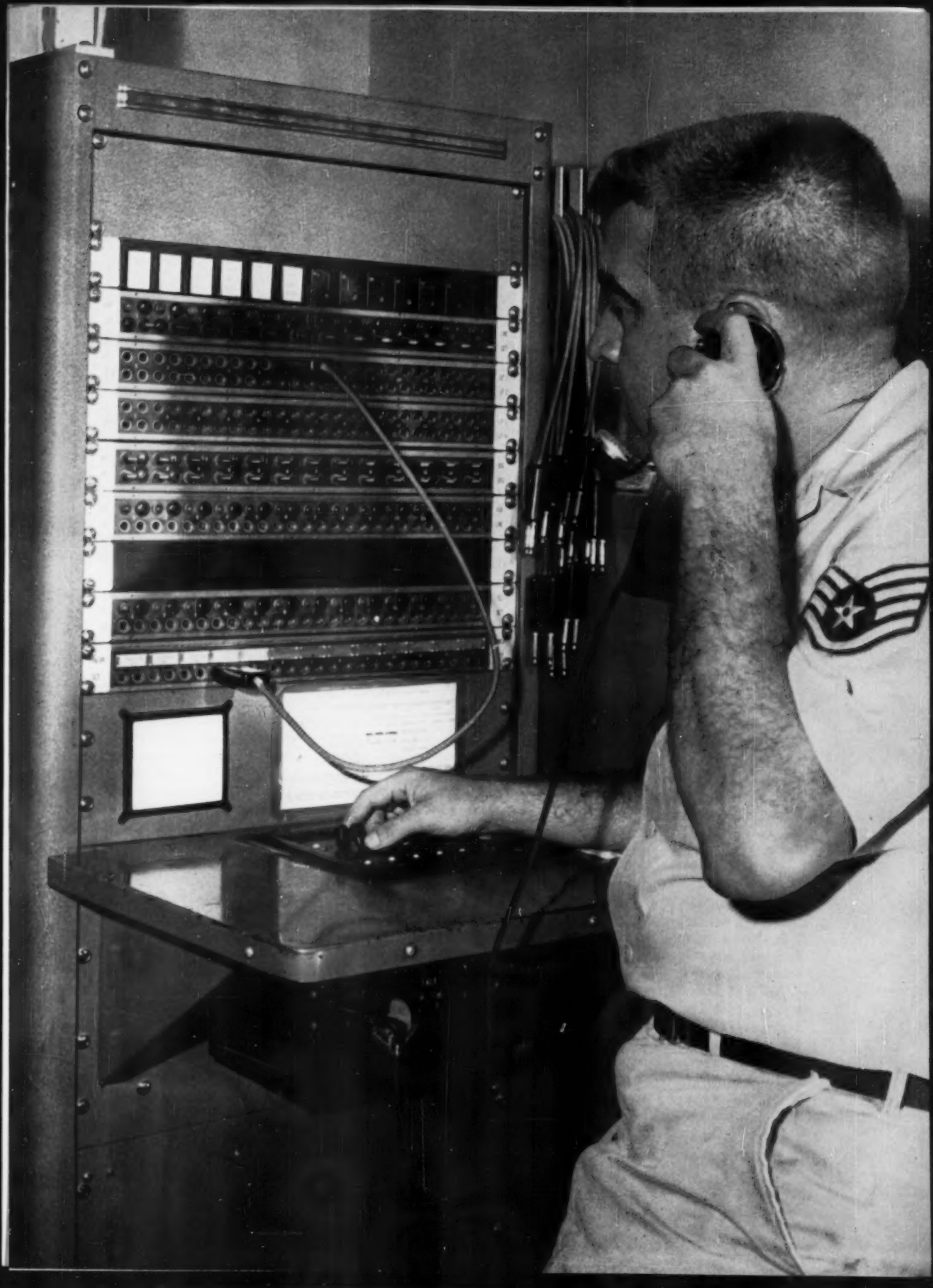
Responsibility for this global operation is centered in world-wide headquarters at Scott Air Force Base, Ill. From here, MATS maintains a system of 115,000 miles of air routes on a wartime readiness basis. It operates 934 aircraft of various types and controls the activities of 110,000 military and civilian personnel scattered on bases throughout the world. Its basic mission is to keep its large airlift systems "D-Day ready every day" in the event of war or national emergency. To accomplish this, MATS has turned to business automation to provide the vital reports and records which spell out its operational status.

Because its ability to meet an emergency may be measured in minutes or even seconds, MATS headquarters instituted an automation program five years ago designed to "secure more effective utilization of command resources through maximum exploitation of automatic data processing systems and to improve management control and planning." This has resulted in a network of punched card installations at remote overseas air terminals linked to major bases in the United States which, in turn, are in direct communication with Scott via the nation-wide VODA (Voice and Data Transmission) system. With this system operating over leased lines, the bases can transmit punched cards to Scott at the rate of eight cards per minute using IBM data transceivers. Instant vocal communication is also available through a special PBX unit which connects headquarters with major MATS bases as well as Air Force Headquarters in the Pentagon.

On a daily basis, punched card information concerning every flight made by MATS planes is forwarded to headquarters where it is processed through an IBM 650 computer system and converted to operational reports detailing flight and route information, cargo and passenger data and revenue information. This flash operational data, transcribed during the night, is printed out in report form for MATS Staff administrators by 8 A.M. each morning.

The computer system, which is operated by per-

Staff Sergeant E. R. Boomhower at the PBX unit of the VODA (Voice and Data Transmission) which links MATS headquarters at Scott Field with major U. S. bases and the Pentagon.



Major Robert C. Culp, chief of data processing operations, checks report information coming off the high-speed printer. Operational reports are prepared on a daily basis.

Data transceivers link Scott with major transport fields. Master Sergeant G. L. Colyott checks one of the four units.

sonnel of the Statistical Services Division of the Deputy Chief of Staff/Comptroller's Office, is also utilized to maintain a complete and up-dated record of the command's "assets" — its manpower strength, its operational aircraft strength, the equipment on its bases, the operational performance of its aircraft, and its operating costs. This information, in both card and tape form, comes to Scott from the major U. S. bases under its command.

Headquarters maintains a master manpower tape file, for both military and civilian personnel. This is updated on a cyclical basis and released in report form quarterly. An equipment inventory tape file—detailing all operational equipment such as aircraft and other vehicles—is also updated on a quarterly cycle.

All told, some 1,200 reports are prepared by the Data Processing Branch of the Statistical Services Division on a daily, every-three-days, weekly, every-10-days, semi-monthly, monthly, quarterly or annual basis. At the present time there are 239 active computer programs and the input into the system is approximately one-quarter million cards a month.

Prior to the implementation of the automation program, operating policy had restricted the use of punched card equipment to headquarters and several of the major MATS airlift bases in the United States. Data was collected manually and sent to one of the major bases or to headquarters where it had to be converted to punched cards. It was a slow process and could not provide timely or detailed reports. Since the program was initiated, mechanized efforts have spread to all bases of substantial capacity, and a limited punched card capability is available even at the intermediate air terminals overseas which handle a larger volume of flights, passengers and cargo.

No profit, no loss

During Fiscal Year 1956, the first year of operation under the planned automation program, approximately $771,700 was expended for data processing equipment at 16 installations. During the current year, it is estimated that over $4 million will be spent to equip 54 data processing installations ranging from single units which simultaneously create punched cards and hard copy documents to full-scale computer systems.

MATS airlift operations have demonstrated that

Six on-line tape stations and one off-line station play a vital role in maintaining manpower and equipment records. Pictured here are Jerry Ferrar, left, chief console operator, and Technical Sergeant W. D. Barker, at console.

the command must exercise each of the planes in the strategic airlift force at a moderate daily rate. At present, this is five hours each day per aircraft. It must fly at this rate to remain in condition—flexing its muscles of supply, management, maintenance, communications and all the other functions essential to the support of airlift operations.

By flying its aircraft an average of five hours daily, MATS is not able to satisfy all airlift requirements of the Department of Defense. As a result, it purchases air transportation services from commercial carriers to move DOD passengers and cargo which it is unable to handle.

Automation assisted MATS headquarters in assuming the role of "Single Manager" for the airlift service. Acting in the capacity of the "main" office, headquarters provides passenger and cargo space to users (Air Force, Army and Navy) and collects revenue for this service.

To this end, MATS, in 1958, was "industrial funded" by the Department of Defense. An industrial fund is a management device employed to promote more business-like practices in activities of an industrial nature. The funds are established by a charter, under the direction of a manager who is provided a "corpus" of working capital. In the case of MATS, the amount was $75 million. With this amount, through the sale of its services to its customers, MATS is expected to operate on a no-profit-no-loss basis. Revenues are received from the benefiting armed services through bills rendered by headquarters.

With this system in operation, MATS is required to get advance information from its users as to the expected tonnage and passengers that the aircraft will be hauling. This information is fed into the computer system in the form of a backlog message and combined with operational and traffic movement data. Aircraft availability and space assignment data is produced for headquarters. If MATS cannot supply the necessary airlift facilities, it purchases commercial carrier service for the flight.

Greenland to Dhahran

All of this information is collected by headquarters and then distributed to the two main airlift elements, Eastern Transport Air Force (EASTAF), located at McGuire AFB, N. J., and Western Transport Air Force (WESTAF), located at Travis AFB, California. These two major

bases actually control the flights to and from overseas areas. EASTAF has 314 authorized aircraft and its area of control and established air routes extend north to Greenland and Iceland, south to Brazil and Ascension Island, and East to Europe and beyond, half-way around the world to Dhahran, Saudi Arabia. WESTAF operates in the Pacific area, extending north to Alaska, south to the Pacific Island bases and west to Japan and the Far East, meeting EASTAF at Dhahran. It has 164 authorized aircraft.

Name, rank and code

An example would be a passenger flight from an intermediate base, such as Orly in France, to McGuire AFB in New Jersey. When the passenger arrives at the air terminal carrying his special orders, he fills out a form detailing name, rank, serial number, base and destination. A passenger detail card is keypunched with this information plus a priority code number and a 15-digit code number which identifies the user (Army, Navy or Air Force). Similar cards are prepared for cargo from shipping documents accompanying the cargo. After keypunching and verifying, the cards are passed through a document writer to prepare the hard copy manifest. All pertinent flight information is keypunched into a header card—identifying the trip, aircraft model, departure time, and the like. At the Transport Airforce (McGuire), the passenger detail cards are reproduced into two decks. One deck is used for passenger revenue purposes, and the other, along with the header cards, is processed for traffic statistics.

Revenue is calculated at EASTAF (McGuire) and invoice cards are produced and transceived to MATS headquarters where they are used for a flash revenue report and a trial balance run off a "today and to-date" basis.

The traffic statistics are compiled from the original passenger detail cards plus the head card which contains arrival, delay, loan and other operational information. These cards, detailing the trip, aircraft model and series, departure and arrival, delays and flying hours are also transceived to MATS headquarters where they are processed through the computer for a complete report on cargo and passengers carried over established routes on that day.

To qualify as a carrier

With this operational information pouring into Scott on a daily basis, the data processing staff is able to compile a series of reports which pinpoint cost of operations, cabin-load utilization, average aircraft utilization, outbound passenger and ton mile utilization, military departure reliability, and

Col. James L. Atkins, chief, Statistical Services Division, is responsible for the data processing and planning activities of the Military Air Transport Service.

commercial schedule reliability. The latter report is important to MATS as a guide to the operational ability of the commercial airlines which are performing contract flights. The commercial airlines, which bid for the jobs, are expected to fly on a 75 percent reliability basis to qualify as a carrier for MATS.

The revenue cards sent daily to headquarters are for statistical purposes only. The actual revenue is calculated at the two Transport Air Forces for their individual areas, and the bills produced on a monthly cycle. They are then forwarded to headquarters where they are consolidated and sent to the various service branches which used cabin space.

Under the realm of SSD

The Statistical Services Division, with its program of planned automation, has aimed at reducing data to machine-acceptable form at every level of the MATS command, from the air terminals to the major bases. Headquarters is the central record-keeping area, maintaining the master files and details of the over-all operation. Its major job is to update the records to keep the MATS Staff and USAF Headquarters fully advised of the military capabilities of the airlift service.

Integrating the data processing efforts of all the MATS installations also falls under the realm

of the Statistical Services Division. There are four branches in the division, the Plans and Liaison Branch, the Statistical Control Branch, the Data Processing Branch and the Systems Branch. The Data Processing Branch is divided into two sections, data operations and production control. Data operations controls and operates the data processing equipment. The Production Control section is engaged in the full time activity of controlling the receipt of the feeder reports, scheduling all machine operations and releasing the information — making sure that full utilization of personnel and equipment is realized at all times. This section advises on the feasibility of accepting new requirements for the system and it publishes the MATS Manuals of detailed mechanized machine procedure requirements to the MATS mechanized reporting units.

The Systems Branch of the SSD is responsible for the administration of systems analysis, development, programming and related procedures. It advises the headquarters staff, subordinate commands and MATS bases in regard to installation and operation of data processing systems, methods and procedures. This unit also performs both staff and field liaison to resolve systems problems and it monitors systems efficiency both in the field and at headquarters. It integrates, refines and optimizes the existing reporting programs and helps in the development of new programs.

Charleston prototype

MATS policy of centralizing data processing at the base level reached a high point in October with the installation of a prototype electronic data processing system (an IBM 7070 computer system) at the Charleston, S. C., base. The large base is a primary functional area of the MATS command. It is here that the aircraft, the crews and supplies are maintained, and it is here that flights originate and terminate in most cases. The base, in a sense, is the production center of MATS.

Charleston has 5,700 civilian and military employes and personenl at the base and maintains 127 aircraft of all types. There are approximately 3,600 passengers using the field each month and 900 tons of cargo and mail are handled. There is an average of 453 flights a month representing 8,000 hours of flying time. The supplies (inventory) value of the base is rated at $30 million.

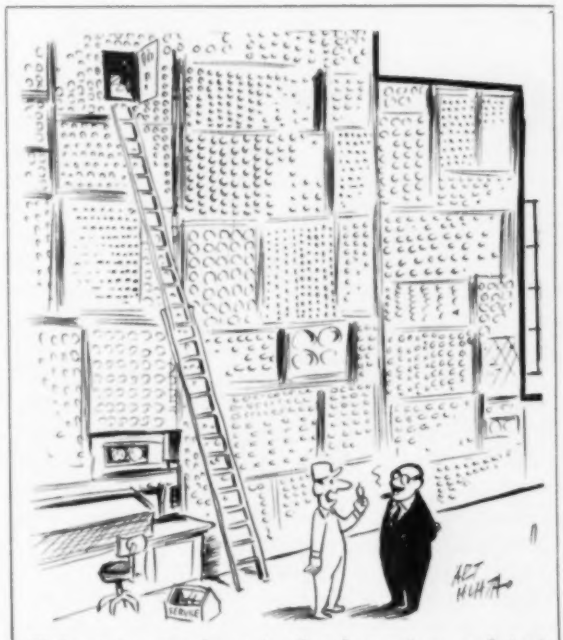
The computer system will be utilized in supply/inventory accounting control. There are some 60,000 line items and approximately 50,000 transactions (supplies issued, turned in, procured) a month. It will maintain a master unit authorization list (furniture and equipment on the base) and it will maintain the base personnel records, reporting daily activities of military and civilian personnel through exception time accounting system to provide labor distribution expenditures. This system reports exceptions such as absent or sick personnel or those on leave or attending meetings. The computer will handle the air operations data (flights, cargo and passenger information), and it will be used in the computing and preparation of the payroll for the base and for general accounting purposes.

"Quick reaction time"

The system will also be used to update the manpower strength accounting information (available crews, pilots, etc.) which, like the majority of data, will be forwarded to Scott to be incorporated in the master tape files maintained there.

The activities of the installation at Charleston during the next few years will determine whether or not centralized computer systems can be economically operated at base level throughout the Air Force.

The dynamic growth of the Military Air Transport Service's effort toward total mechanization has already paid off in a manifold increase in its operational ability. The hundreds of reports generated through punched card and electronic data processing have contributed to the "quick reaction time" which makes it possible to deliver combat troops to any point on the globe or medical supplies to a disaster area in a matter of hours. ■



"I have to run down to the drug store and test this tube."

Punched card utility billing has given way to a computer and optical scanning in this new data processing center.

Atlantic City's EDP 'Showcase For Service'

By Robert W. Hogg

A NEW accounting and electronic data processing center, one of the most advanced in the electric power industry, is providing faster, more efficient service to more than 230,000 customers, in 377 commmunities, served by the Atlantic City Electric Company.

The center, opened last July, has enabled the utility firm to slash paperwork handling time in half, and to fully automate customer accounting procedures.

Even while builders were still completing the final construction stages of the "showcase" center, the heart of the EDP operation—an RCA 501 computer system—had begun the entire customer accounting processing cycle. Using paper tape input and automatic re-entry through optical scanning, the system is producing 12,000 ready-to-mail postcard size customer bills daily.

There is no punched card equipment in the center, since the 501 system is specifically designed for magnetic tape and paper tape in order to permit automatic re-entry of information.

One of the technical problems involved in the initial conversion was the need to translate 90-column cards used in Atlantic's previous system to the new RCA 501 code. Arrangement was made for the 90-column cards to be converted into standard 80 column cards. The card data was then placed on magnetic tape in 501 code, using a punched card transcriber at RCA's Wall Street Data Center. Though the dual translation may appear to have been a difficult one, it was actually routine in its simplicity.

A high level of accuracy was accomplished in the translation. Spot checks and other audit controls indicated that the error percentage in reading from 90 to 80-column cards and then to tape, was no greater than in normal card reading.

The automated customer accounting system developed by Atlantic City Electric utilizes the equipment of several manufacturers, with the 501 system as the keystone.

To enter meter readings on punched tapes for input to the computer, the system uses Friden Programmatic Add-Punch machines. The program information is comprised of the account

Before the construction workers had put the finishing touches on the new data processing center, the RCA computer system was installed and working to process customer accounts.

numbers in the same sequence as in the meter book. The paper tape containing these account numbers is produced by the computer punch as a by-product of updating the master file. During the file maintenance run, the computer extracts the account numbers of approximately 12,000 customers scheduled for each day's billing cycle.

A Sandwich for Mailing

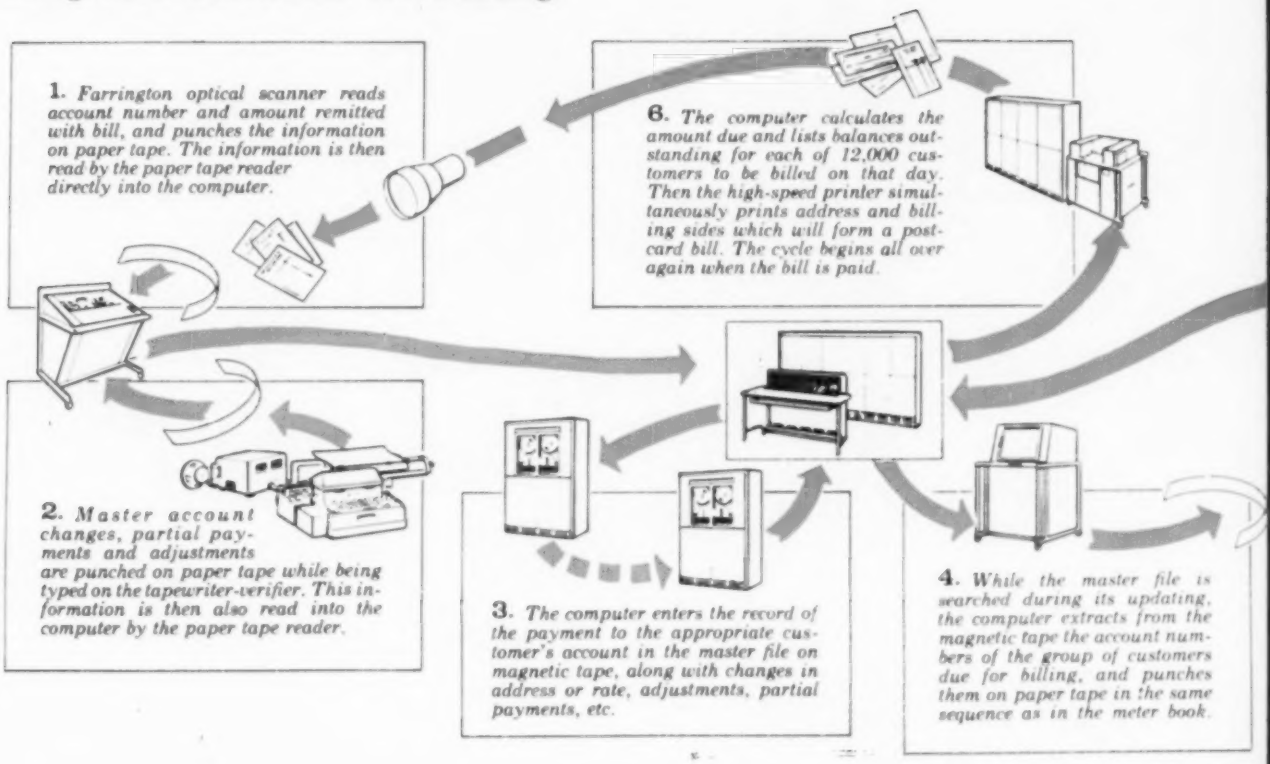
The paper tape, with the extracted account numbers in meter book sequence, is then fed into the Add-Punch machine. This device automatically reads in the account number and then stops for entry, by the operator, of the four digits of the meter reading, taken from the meter book. The equipment also has the flexibility for re-entry of variable information.

The system output for customer accounting is mainly produced by the high speed, off-line printer. The printer, which uses a special type font for accurate reading by the optical scanner, operates with its own magnetic tape station and electronics unit, independent of the computer. The billing information on magnetic tape is printed out on a paper bill form which carries the customer's address and billing information side-by-side. The bill form is chemically treated so that when put through a Moore Business Forms Laminator and Burster machine, the two sides are "sandwiched" together to form an automatic postcard bill ready for mailing.

For cash entry, the system uses Farrington-IMR Optical Scanning equipment. This device optically scans cash stubs, returned with the customer payments, at the rate of 100 per minute, punching the account number and cash amount into seven-level paper tape in the computer. The cash stubs are the detached portion of laminated postcard bills, produced by the high speed printer.

While scanning and punching the information, the IMR device automatically verifies the account number and amount by comparing them with check digits and it records the cash amount collected in an accumulator. The amount recorded in the accumulator is automatically entered on the

Integrated Electronic Accounting


1. Farrington optical scanner reads account number and amount remitted with bill, and punches the information on paper tape. The information is then read by the paper tape reader directly into the computer.
6. The computer calculates the amount due and lists balances outstanding for each of 12,000 customers to be billed on that day. Then the high-speed printer simultaneously prints address and billing sides which will form a postcard bill. The cycle begins all over again when the bill is paid.
2. Master account changes, partial payments and adjustments are punched on paper tape while being typed on the tapewriter-verifier. This information is then also read into the computer by the paper tape reader.
3. The computer enters the record of the payment to the appropriate customer's account in the master file on magnetic tape, along with changes in address or rate, adjustments, partial payments, etc.
4. While the master file is searched during its updating, the computer extracts from the magnetic tape the account numbers of the group of customers due for billing, and punches them on paper tape in the same sequence as in the meter book.

paper tape at the end of each batch of stubs.

To add flexibility to the system, partial payments and special information may be entered on paper tape through the RCA 501 tapewriter and verified on the tapewriter-verifier.

Consistent high-quality print-outs by the off-line high speed line printer result in phenomenally accurate optical scanning for automatic data re-entry. On a recent day, approximately 7,000 post-card bill payments were read to punched paper tape by the Farrington-IMR Optical Scanner with only one drop-out requiring clerical handling. Daily averages of 2,000 to 3,000 paid bills are being read with rejects of .001 to .002 percent.

Initially, five men were assigned by Atlantic City Electric for programmer training. They were later joined by several of RCA's resident EDP methods specialists to form the programming team.

To further strengthen the approach to EDP, several men from the Atlantic's System Department were assigned to the conversion program. These men "lived" with the computer programmers during the entire development stage of the customer accounting activity. Their major contribution was the coordination of the needs of the company's business offices with the system requirements of the new EDP department. This procedure worked very successfully and a unified approach to the problem was also readily achieved.

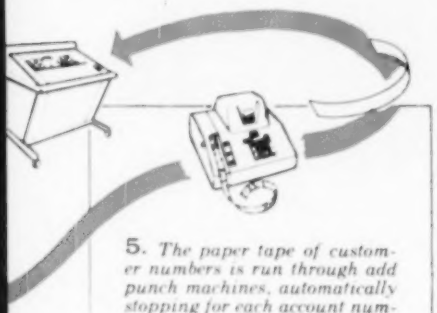
The individual programmers then proceeded to the building and debugging of the programs for the various computer runs on the customer accounting system. Now that these have been completed, they are working on the phasing-in of the subsequent applications.

Black Horse Pike and Fire Road

A large part of the customer accounting programming took place during the final construction stages of the new Accounting and Data Processing Center. Indeed, the equipment was installed and in operation before substantial portions of the new center were completed. Located in the center of a 30 acre tract, some eight miles from Atlantic City on the Black Horse Pike and Fire Road, Egg Harbor Township, New Jersey, the new center was functionally designed to house the accounting and EDP departments.

The main part of the building is comprised of two 10,000 square foot areas, each behind a glass-walled corridor. In one of these areas the EDP

Integrated Customer Accounting, as illustrated in the chart, is the primary application developed for the computer, with payroll and stores accounting to follow. Together with the many new and more timely reports available for management, many other applications will be developed to improve Atlantic City Electric operations and services to its customers. The computer will also be used for important engineering and other scientific applications.



5. *The paper tape of customer numbers is run through add punch machines, automatically stopping for each account number to permit the operator to punch in the meter reading from the meter book record. The paper tape with the meter reading for each account to be billed is then read into the computer.*

Operator of the Farrington-IMR Optical Scanner punches a control total for post card bills inserted in the hopper for reading.

Bills produced by the high speed printer are passed through the Moore Laminator-Burster which folds and sandwiches two sides to form the post card bill.

Operator (above) uses the typewriter-verifier to register irregularities and create tape for the system. Operator (below) enters meter readings from book with Friden Programmatic Add-Punch.

system was installed in April, 1960. Late in May, the Accounting Department transferred to the new center from its scattered and overcrowded locations in Atlantic City.

A third portion of the building houses various building facilities, such as heat, power and air conditioning equipment and employe cafeteria and rest rooms. The attractive design of this new facility won Frank Grad and Sons, the architects, an award for New Jersey's outstanding office building in 1959.

The entire building is air conditioned. Its facilities are ideal in every respect for the functions which they house. A great deal of attention has been paid to work flow and optimum environment for both people and equipment.

For example, the computer room is separated from the main portion of the EDP Department area by a glass wall. In the main portion, the manager of the EDP Department has his office and is in close contact with his programmers and with the tapewriter and add punch machine operators who prepare the input.

A vigorous advance

The computer room is divided into a main portion and four smaller rooms, two on each side. One room houses the test equipment and bench facilities of the resident maintenance engineers provided by the RCA Service Company. Adjacent to this is the room for the Farrington-IMR Optical Scanner equipment. The other two smaller rooms house the magnetic tape library, and the Moore bill laminator and burster, respectively.

Now that conversion of customer accounting to EDP is progressing on schedule, the company's plans to extend computer control to other payload operations throughout the system are being vigorously advanced. Analysis and programming for conversion of stores, payroll and property records accounting and engineering computation is now being completed. Actual production on the first of these additional operations will be early in 1961.

Extension of computer operations is being developed by a top-level management team, which has been set up as a computer utilization committee. Its objective is the broadest utilization of the new system in all areas of the company. The underlying policy is that priority of conversion will be based on applications which are most beneficial to the company. To aid the computer utilization committee in its administration of these priorities, the Systems Department is analyzing paperwork volumes and computation problems throughout the company and developing new procedures applicable to EDP.

The potentiality for these additional payload operations is germane to the basic decision which led to the selection of the RCA 501. The EDP system was developed to accommodate a projected 10 year growth in business volume. The present computer provides ample capacity.

In addition, the 501 is built upon a modular concept, which makes possible expansion of the system to accommodate an enormously larger volume of work. For example, Atlantic's system uses a single module of high speed memory, which provides 16,384 character locations. Additional modules of memory may be added up to a total of 262,144 character capacity.

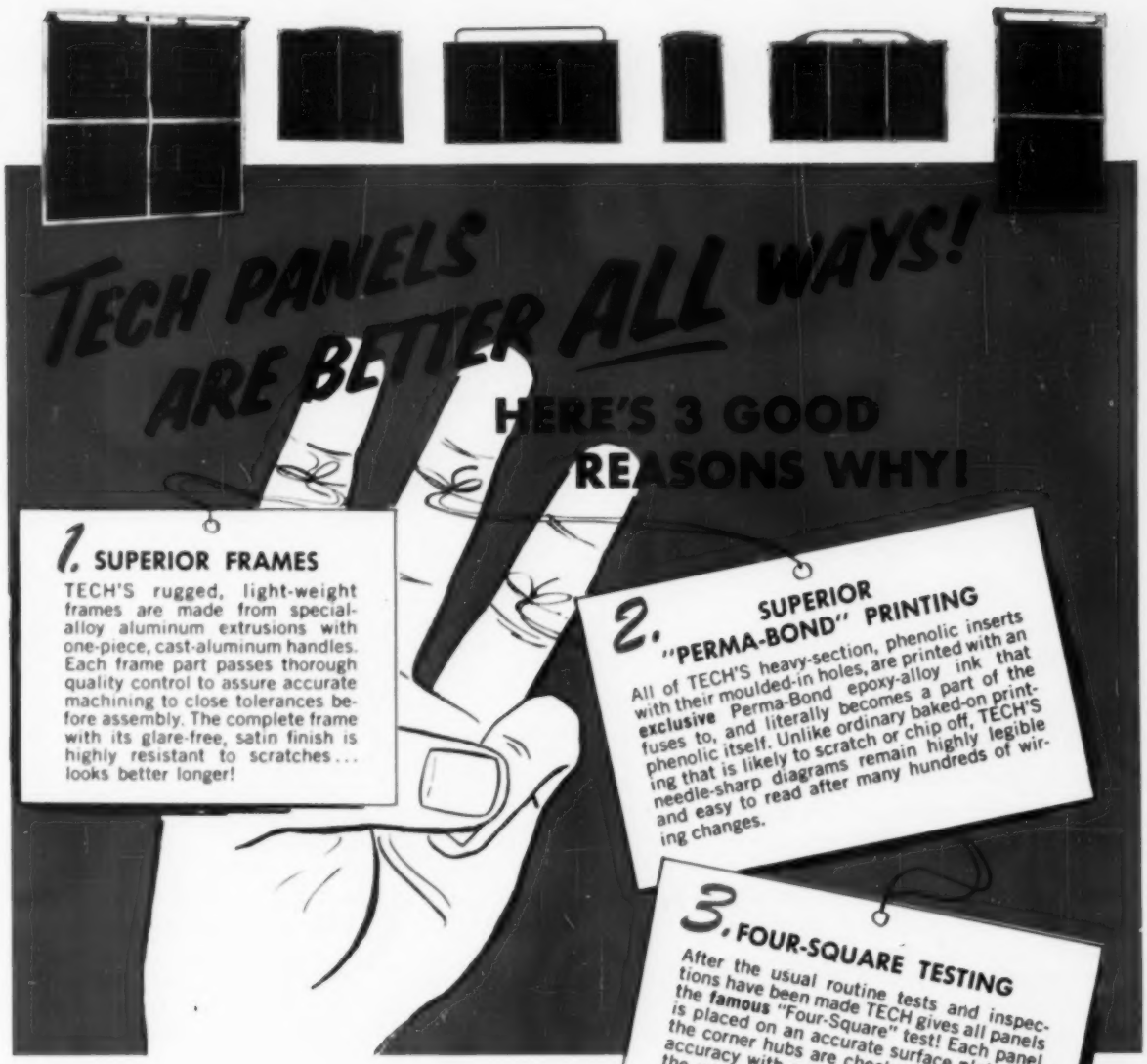
Crystalized experience

The six magnetic tape stations presently used for bulk storage in the 501 may be expanded to a total of up to 62. The high speed printer is used off-line with a seventh tape station. As many of these units as necessary may be added. The tapewriters and tapewriter-verifiers are also off-line devices punching the computer's seven level paper tape for input simultaneously with hard copy produced through the keyboard.

Atlantic City Electric is quite proud of its facility as probably one of the most advanced accounting and EDP centers in the electric utility field. Crystallized in the center are a great deal of research and practical experience by both Atlantic City Electric's personnel and RCA's site planning and development people. It is not only a showcase, but a tangible evidence of the many benefits derived from careful planning of an EDP system and its physical facilities as an integral unit. ■

About the Author

Robert W. Hogg was elected treasurer of Atlantic City Electric Co. in 1951, having served his firm since 1929. He played a major role in initiating and establishing the company's advanced accounting and EDP center.


TECH PANELS ARE BETTER ALL WAYS!
HERE'S 3 GOOD REASONS WHY!
1. SUPERIOR FRAMES
TECH'S rugged, light-weight frames are made from special-alloy aluminum extrusions with one-piece, cast-aluminum handles. Each frame part passes thorough quality control to assure accurate machining to close tolerances before assembly. The complete frame with its glare-free, satin finish is highly resistant to scratches... looks better longer!
2. SUPERIOR "PERMA-BOND" PRINTING
All of TECH'S heavy-section, phenolic inserts with their moulded-in holes, are printed with an exclusive Perma-Bond epoxy-alloy ink that fuses to, and literally becomes a part of the phenolic itself. Unlike ordinary baked-on printing that is likely to scratch or chip off, TECH'S needle-sharp diagrams remain highly legible and easy to read after many hundreds of wiring changes.
3. FOUR-SQUARE TESTING
After the usual routine tests and inspections have been made TECH gives all panels the famous "Four-Square" test! Each panel is placed on an accurate surface plate and the corner hubs are checked for positional accuracy with a dial test indicator. Then—the panels are wired from corner-to-corner and checked for electrical continuity in the very type of machine-closing mechanism on which they will be used.

TECH takes *extra* steps to build *added quality* into each panel! You can be sure, that after spending hours wiring a TECH Panel, it will perform dependably and accurately the first time . . . *every time!* Yes—that's because TECH makes sure that each panel you buy functions properly before it is shipped to you. Your TECH Panel dealer now has the panel you need in local stock—call him today on your requirements.

TECH-PANEL
COMPANY, INC.
KIRKWOOD, NEW YORK
(In Suburban Binghamton)
ALL TECH PANELS ARE FOUR-SQUARE TESTED

— — —WRITE FOR FULL INFORMATION! — — —

Tech Panel Company, Inc., Kirkwood, N. Y.
Send me literature and name of TECH Panel dealer.

NAME_____
COMPANY_____
ADDRESS_____
CITY_____ ZONE____ STATE_____

IN CANADA: Modern Business Methods Limited, Toronto, 19.

0-382

For More Information Circle Reader Service Card No. 164

New System Integrates Shell Oil Management Data

By J. W. Haslett and Paul A. Kalb

AFTER five years of pioneer planning, the Shell Oil Company is on the threshold of a completely integrated management information system that will encompass point-of-sale petroleum products at the plant level through final financial consolidation of figures by Shell's data processing center in New York.

The new system, which has been successfully tested for both concept and equipment performance, calls for installation of small-scale computers at Shell plant locations to handle all clerical operations. Shell officials have selected a newly developed, relatively inexpensive computer—the Monrobot XI—for the plant installations. The desk-size electronic system has five channel punched paper tape input and output in addition to keyboard entry and printed output. Cost of the Monrobot is equal to the salary and burden of one clerk.

Small computers with "single" machine program will capture point-of-sale data, eliminating clerical handling and errors.

A single machine program has been devised that will handle all types of transactions relating to product movements that might occur in a bulk depot, terminal or refinery. This includes the preparation of shipping papers, invoices, receiving reports, stock replenishments and "own" consumption documents. The system is designed to automatically summarize transaction totals for sales, stock and monetary accounting, and to print out self-balancing reports for plant management and control purposes. All items relating to product and monetary accounting details at Division Accounting Offices are automatic by-products, as are shipping, inventory and other operating data required by control departments such as Traffic and Supplies.

Because all data has been mechanized at origination, the coding, key punching, verification and other upgrading of data that normally precedes machine processing at division accounting offices will be eliminated. The anticipated elimination of all manual processing of paper work, after the original transaction is once processed, is expected to greatly reduce clerical costs in these offices.

Master information concerning customer, product, transaction and auxiliary programming, is carried in five channel tapes, providing sufficient memory for any transaction. The computer has been programmed to recognize, through coding techniques, all of the various transactions that can occur. The machine recognizes the codes as debits and credits to various accounts held in the computer's memory, modifying them accordingly.

All transactions are processed in a like manner; all types of transactions and summary reports are recorded on a single, multi-purpose form. The computer is programmed to recognize, sequentially, a system of codes in the master tapes and to modify and process the data to fit the needs of the transaction being recorded. Transactions are

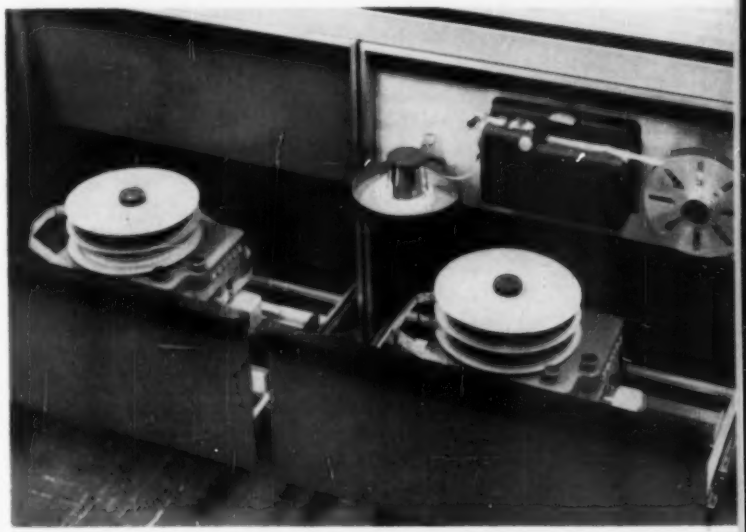
The Monrobot Mark XI in operation at a Shell plant. Operator holds one of the master tapes which controls preparation of documents printed out on Teletypewriter, shown at right. Computer is product of Monroe Calculating Machine Co.

processed in random order as they occur during the day's operation, and all are treated alike with one machine program, giving a 10-fold increase to job processing volume. This approach differs widely from the multiple programs and separate handling of the various types of transaction entries employed in most present system concepts.

Tape output from the system is used for further processing, and by-product tapes may be reinserted into the machine for further analysis at the plant location, such as inventory and stock reorder procedures.

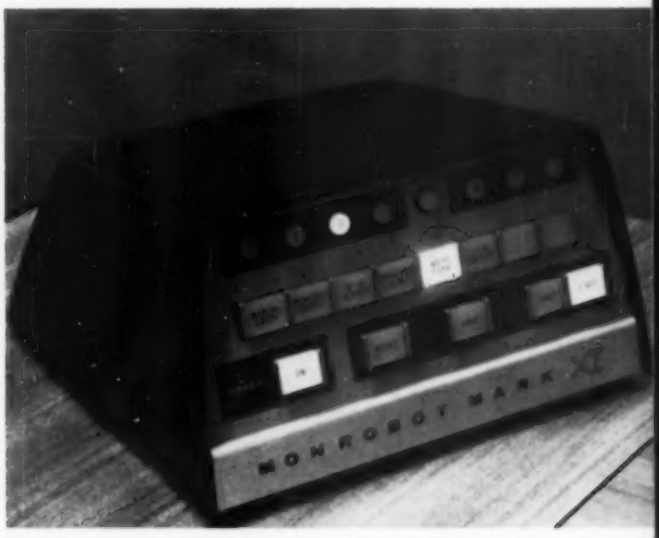
The Monrobot has 1,024 words of drum memory which are used for programming logical and arithmetic functions and to accumulate data necessary to plant operation and control. This summary data can be called for and printed out as required. In all, the computer will make from 300 to 500 decisions and about 100 different calculations in processing various transactions—all in a matter of seconds.

Examples of the computer's flexibility are best illustrated by the functions it performs in connection with shipping and billing applications.



Close-up shows tape input and output devices. At lower left is the stock control tape. Lower right is the detail and summary sales transaction tape. Tape reader is above.

The combination invoice and bill of lading is prepared on the teletypewriter, the input and output unit of the system. Keyboard is used for manual entry of variable data.



Buttons on the computer control console make it a simple job for the operator to select a program or perform an input or output operation. Programs are developed in the head office.

In the shipping procedure, the computer will assemble shipments by Interstate Commerce Commission shipping classifications, compute the number of packages, compute the shipping weights, and apply freight rates while computing anticipated freight billing. It also recognizes, from master tape codes, that the movement is by Shell truck or by common carrier and, if by the latter, it sets itself to automatically write the bill of lading or waybill necessary to this type of movement.

In the plant billing operation, the computer is even more versatile. It first applies the proper Division office remittance address if the transaction is a sale. It then computes the various kinds of city, state and federal taxes applicable to the customer and the product, accumulating and printing them on the invoice or listing them as tax exemption items, as applicable.

The price in any situation

The Monrobot computes the price to be charged for each product sold to any customer in any situation. It first selects the base price applicable to the product and type of customer, then selects taxes applicable to the customer, product and consignee's location applying the taxes when necessary. It is programmed to recognize contractural arrangements with the customer and modifies price accordingly. It also applies proper factors for accumulative purchases to date and applies surcharges or allowances applicable to the specific shipment.

In this regard, tests to date show 100 percent

Continued on Page 34

About the Authors

This report of Shell Oil Company's Management Information System was prepared exclusively for MBA by John W. Haslett (author of A new Role for the Systems Man, Feb. '60), manager of Shell's Methods and cedures Department, and Paul A. Kalb, coordinator of IDP, who developed the system described.

XEROGRAPHY in OFFSET DUPLICATING

NEW metered cost-per-master plan cuts offset duplicating costs

Under our new reduced rental plan for standard XeroX® master-making equipment, you pay only for the offset masters you make beyond an established minimum.

This metered cost-per-master plan is especially designed for low-volume users of offset masters. It means you can now economically justify the use of XeroX equipment and enjoy all the benefits characteristic of xerography, the world's most versatile copying process: high quality, low cost in a clean, fast, dry operation.

Write today for full information. Haloid Xerox Inc., 60-185X Haloid Street, Rochester 3, N. Y. Branch offices in leading U.S. and Canadian cities. Overseas: Rank-Xerox Ltd., London.

HALOID XEROX®

For More Information Circle Reader Service Card No. 179

Shell Oil

Continued from Page 32

accuracy in computing the price. Shell employs about 45 price verification clerks in Division offices to verify prices applied by plant invoicing personnel. If the incident of error ratio in pricing and extending invoices is reduced to the extent now possible, the company will be able to eliminate the daily manual price verification procedure and substitute a periodic mechanical audit.

The computer also recognizes the kind of product loading, billing and inventory units and makes all necessary conversions. It automatically computes all conversions of volume to desired degree gallons on recognition of loading temperature and situations where applicable.

At the same time the computer also automatically computes and stores in its memory the sales gallonage by class of product and the net change in inventory by class of product. These changes are recorded from sales, transfers, purchases, product receipts, own-consumption or other transactions that occur.

In the process, it also computes cash and journal items. These items are printed out and punched into by-product tapes on command (D-9 Plant into by-product tapes on command. All accounts are automatically balanced.

The Monrobot punches out, in one tape, the data selected for conversion to punched cards. These include sales detail cards by customer and product, returned sales detail by customer and product, stock and inventory detail cards, all tax or other journal cards such as freight allowances or charges, accounts receivable total cards showing cash discounts allowable, freight detail cards for transportation verification and to automatically net out product proceeds, and general ledger control cards.

Blending, drumming and shipping

A second tape is punched out which shows change in inventory by class, brand, viscosity and container type and size. This tape will be reprocessed through the computer to post perpetual inventory and select items needing replacement. Further studies are underway into a technique whereby the data is centrally processed for all shipping points in order to improve production planning and scheduling in blending, compounding, drumming and shipping at supply points.

One of the main advantages of the new system is its ability to automatically select out at no addiable. This information, in mechanical form, will be tional cost any data recorded as a result of any type of transaction. This means data which heretofore has been too costly to gather is now availthe means of mechanizing many control or planning functions that are now performed manually.

Another advantage is that the small computer is programmed so operaters in the plant need no knowledge of computer technology. Master tapes will be controlled by the Marketing Division office, and the operator, in most instances, will only be required to insert the proper customer or transaction tape and key in the quantity of product loaded and the temperature. The machine writes the necessary forms and records the transaction details. Plant personnel cannot modify the machine program except under controlled conditions.

The potential savings at plants indicate a justification of the system in a majority of locations. In addition, there is a much larger potential savings in data processing time and costs at the Division offices. The same should be true at control departments and supply points where better operations will be possible through more timely and improved planning and scheduling. At the present time, it has been decided to install compatible, semi-mechanical systems in plants that cannot qualify for a computer installation.

A firm foundation

Shell's management information system follows the principle that data introduced and captured from basic transactions at the beginning of the system is automatcially prepetuated thereafter for all subsequent operating and financial purposes. The setting of objectives and development of plans for the system took place over a number of years.

Eight years ago, Shell reached its first goal in the field of financial organization and procedures: the uniform arrangement of functions in its many offices and the issuance of standard manuals for all accounting and clerical systems. During the same period, procedures at the branch office levels have been mechanized to a significant extent. A more recent accomplishment was the automation of procedures at the head office level. To do this, it was necessary to establish a new code of accounts, bringing together a variety of departmental codes which had sprung up over the years.

Having bridged the gap between the two higher levels of operation with automation, Shell's Methods and Procedures Department is concentrating on the plant level, confident that a firm foundation has been established for the comprehensive integrated management information system. ■

ONLY HONEYWELL GUARANTEES ITS SYSTEMS WON'T DAMAGE YOUR TAPES!

NOW...HONEYWELL EDP SYSTEMS AIR-CUSHION MAGNETIC TAPE TO PROTECT VALUABLE RECORDS

Honeywell electronic data processing scientists have developed the world's most reliable tape drive mechanism. It virtually eliminates the common causes of tape damage which can shut down the equipment for costly minutes or hours. This new technique is so reliable that Honeywell is the only computer manufacturer that guarantees its Systems will not break or damage your tapes during processing. If they do, tapes will be replaced without charge.

NO PINCH ROLLERS — ANYWHERE. Only Honeywell 800 and 400 high-speed Systems transport magnetic tape *by air* throughout the processing cycle. Vacuum capstans take the place of old-fashioned pinch rollers, dramatically reducing wear and tear, flaking and scratching. The recording surface is touched only by the recording head and only when information is read or recorded. Since nearly every read-write error can be traced to tape surface damage, it is clear why Honeywell tape drives are intriguing managements in all parts of the business world.

ADD ORTHOTRONIC CONTROL — AND MAKE SURE. Added to this advanced technique of vacuum transport is Honeywell's exclusive Orthotronic Control, which insures uninterrupted accuracy during processing. Using Orthotronic Control, Honeywell Systems can re-create lost or damaged data instantaneously — without human aid, without reprocessing. Errors can be detected and corrected *automatically* in 1/20th of a second. Where other systems would stop and blink signals for human help, Honeywell 800 and Honeywell 400 will simply do what needs to be done and keep humming right along at top speed.

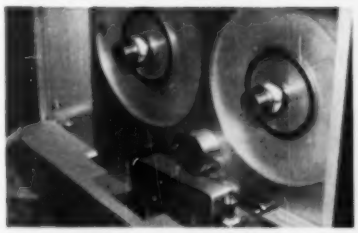
ELIMINATE UNPRODUCTIVE MACHINE TIME. This self-correcting ability plus the protection inherent in airborne tape combine to boost your profit potential on any data processing application. These Honeywell scientific advances help eliminate machine downtime, which methods men know can often cancel the economic gains of electronic data processing.

INVESTIGATE HONEYWELL 800 AND 400 SYSTEMS. Greater reliability in data recording is but one of the several major factors that multiply the cost advantages to users of Honeywell EDP Systems. If your company is now considering the move to electronics, we respectfully suggest you put Honeywell Systems at the top of your list for investigation. Our applications engineers will be glad to discuss your individual requirements.

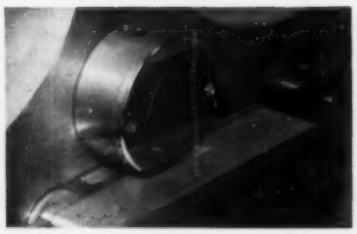
For more information, get in touch with your nearest Honeywell office. Or write Minneapolis-Honeywell, Datamatic Division, Wellesley Hills 81, Massachusetts; or Honeywell Controls Ltd., Toronto 17, Ontario.

75 YEARS ENGINEERING THE FUTURE

WHY HONEYWELL RECORDING TECHNIQUES ARE FASTER, MORE RELIABLE

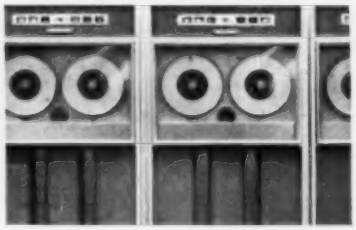


Vacuum capstans propel tape gently and precisely throughout processing cycle, removing danger of damage by pinch rollers.



Recording head alone touches recording surface of magnetic tape, reads information with tape moving forward or backwards.

Tape changes can be made in less than 25 seconds. Changes on other data processing systems often require several minutes.



Information is read or recorded with tape moving 120 inches per second, a transfer rate of 96,000 decimal digits per second.

Honeywell

Electronic Data Processing

For More Information Circle Reader Service Card No. 165

Latest MBA Report on . . .

Survey of Business Machines Executives' Compensation

By D. Ronald Daniel

COMPENSATION of chief executives in the business machines industry increased a healthy 12 percent in 1959 over the previous year's level, while the average increase for 605 executives in 25 industries was eight percent, according to the sixth annual survey of business executives' compensation conducted by McKinsey & Company, Inc. This is a comprehensive study of the behavior, relationships and levels of top management remuneration. The current analysis focuses on the comparison of the 1959 relationships with those figures from the 1953 survey, the first year in which the survey was conducted.

Business machines reinforced its position as one of the highest paying industries in the country, largely because of a substantial shift in the industry's product line—the introduction of computers and electronic data processing systems.

Six years have been a period of dramatic change for this industry. Along with the introduction of new equipment has come increases of 132 percent in sales and 172 percent in profits. This compares with gains of 43 percent and 31 percent respectively in the all-industry sample of the survey.

Against this perspective of rapid growth, several changes in the compensation of business machines chief executives have taken place during the past six years: (1) Average chief executive compensation has risen from $93,000 in 1953 to $131,000 in 1959; (2) The business machines chief executive running a company of the same size (i.e. sales volume) in both 1953 and 1959 would on the average have received 18 percent less in 1959 because of a substantial flattening of the sales/compensation relationship; (3) But, because of the tremendous sales growth during these six years—132 percent—the net effect has been a 41 percent gain in compensation for the average business machines chief executive. This compares to an increase of 16 percent for the average chief executive in 25 industries.

Profits influence more than sales

The sales/compensation relationship for the business machines industry for both 1953 and 1959 had been figured mathematically to best depict the relationship between sales and chief executive compensation for eight leading business machines companies. Although the industry consists of many more than eight enterprises, the sample was restricted to this number to ensure comparability over the six year period with the knowledge that these eight corporations represent perhaps 90 percent of the volume of the industry. From this relationship it is possible to approximate the compensation of the chief executive of a business machines company of any given size based on existing industry patterns.

The compensation of chief executives related to net sales (Chart 1) points up the previously stated "flattening" of the trend line in 1959. It indicates a depression in the level of compensation (i.e. lower compensation at the same sales level) for the industry. This is partially explained by the

---

About the Author

The author of this second business machines executives' compensation survey published by MBA (See Oct. 1959 issue) is D. Ronald Daniel, associate in the New York office of the management consultant firm McKinsey & Company, Inc.

Compensation of Chief Executive Officers Related to Net Sales

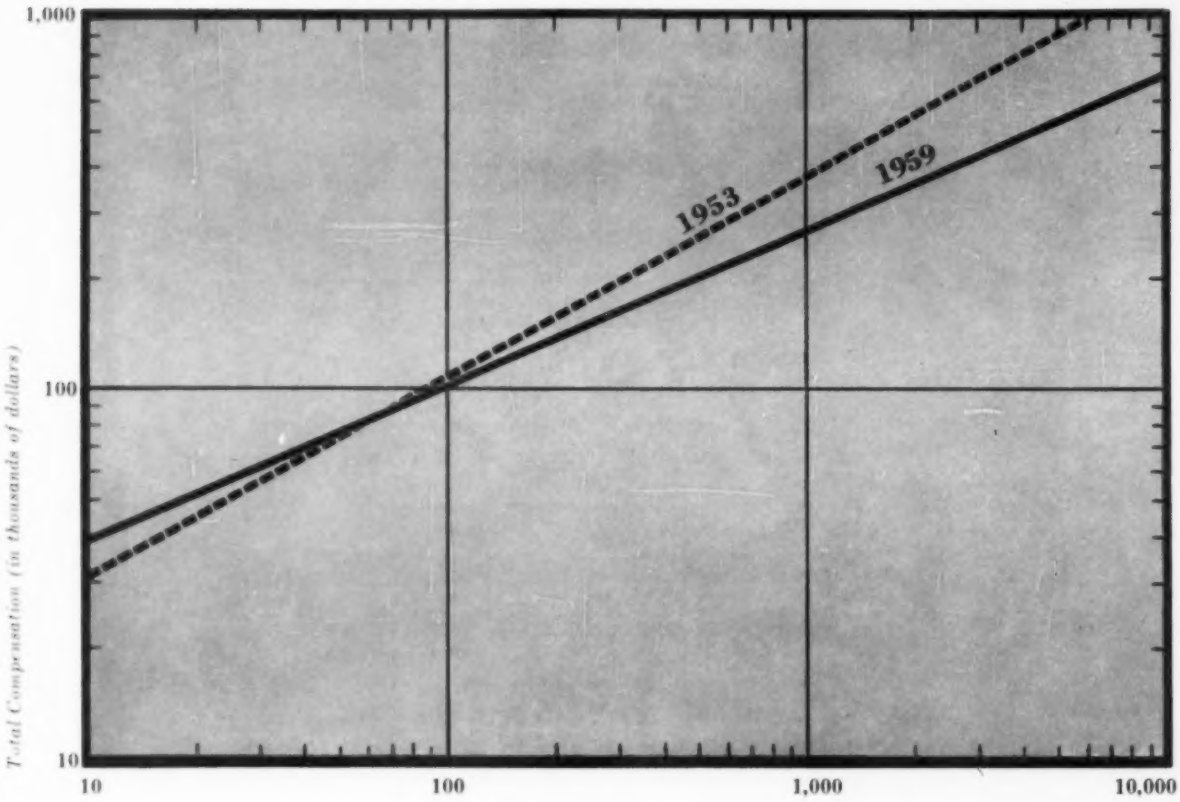


CHART 1

fact that as business machines companies have grown in volume between 1953 and 1959—from small to medium sized companies and from medium to large sized companies—the compensations of their chief executives have not kept pace. Consequently, the 1959 portion of the trend line has been "pushed down."

As was mentioned, however, the sales growth of individual companies has been strong enough to offset this effect and produce a significant 41 percent increase in the actual compensation of the eight chief executives.

The correlation between increases in compensation and increases in sales is quite high in the business machines industry, and it grew even stronger between 1953 and 1959. The variation in compensation due to differences in company profits is even greater. Chart 2 shows to what extent changes in compensation are caused by variations in sales and profits.

For business machines, 65 percent of the change in compensation in 1953 was caused by sales changes. In 1959 it was 66 percent. For all 25 industries the corresponding figures were 48 percent and 57 percent respectively. Thus, sales changes exert a greater influence on compensation in business machines than in industry in general.

End of the spectrum

Variation in compensation due to differences in company profits show more strongly for business machines. The rise between 1953 and 1959 moved from 73 percent to 80 percent for the industry, while the all-industry figure increased from 38 percent to 50 percent. Profits, therefore, are an even greater pressure on business machines compensation than sales. One explanation of the closeness of this compensation-profit "fit" could be a heavy use of profit-based compensation plans (bonuses, profit sharing) in this industry.

In addition to the over-all relationship between

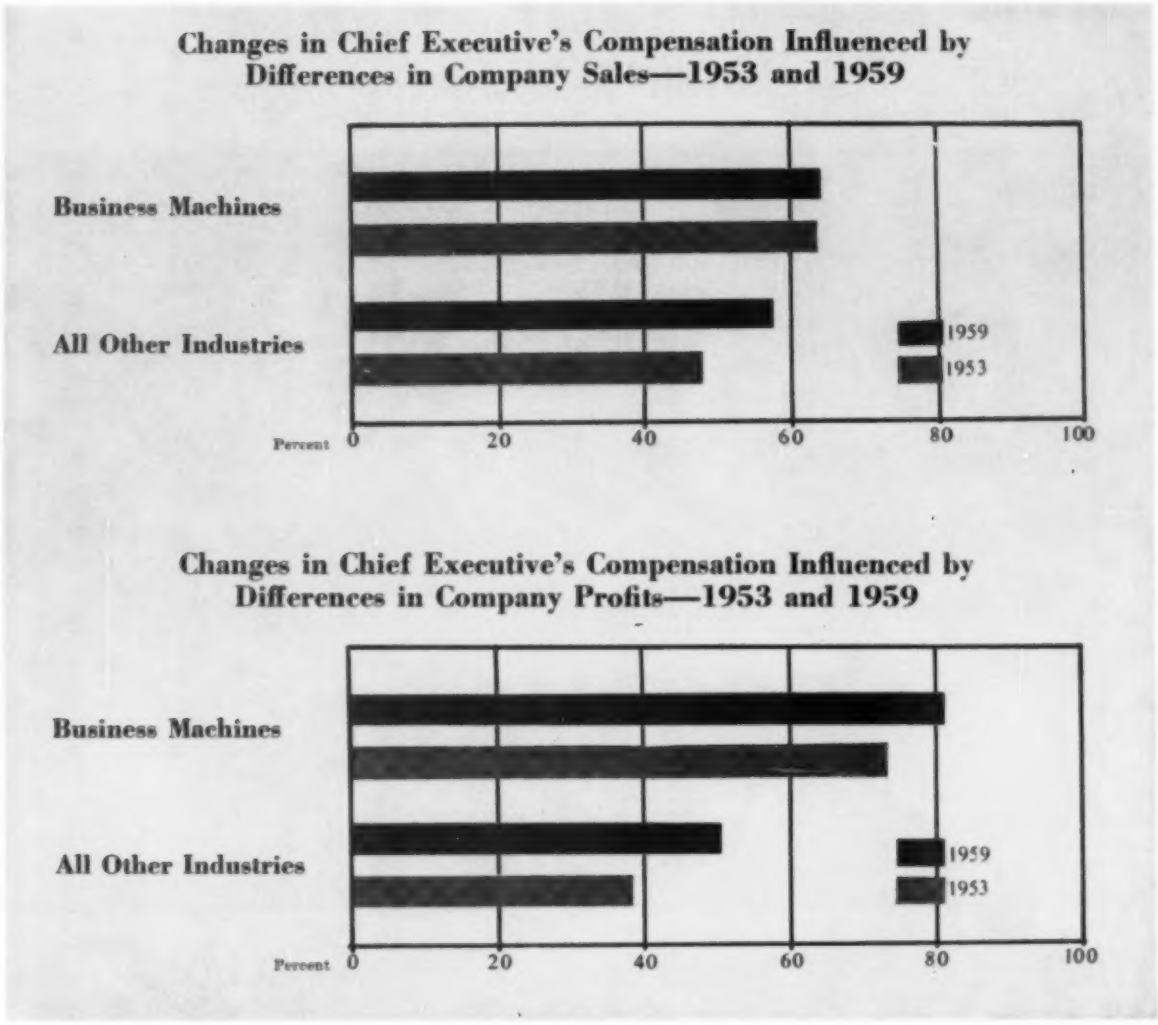


CHART 2

size and compensation, it is interesting to observe the shifts in compensation from year to year in relation to the changes in both straight sales and profits. In the percentage gains or losses in chief executive compensation, sales and profits, for the surveyed period, business machines with by far the greatest increases in both sales and profits showed the second largest compensation jump. Only the top executives of large diversified companies gained more (Chart 3). Other industries with solid compensation increases—air transport, building materials and electronics, to name a few —also scored impressive gains in sales and profits. Incidentally, at the other end of the spectrum, the correlation is not nearly as strong. Consumer durables and textiles had actual decreases in chief executive compensation, despite fairly good sales and profit performance.

This seeming inconsistency is, for one thing, the effect of turnover in chief executive positions, and it is revealing to look at this aspect of the business machines industry. Five of the eight companies studied, in this period, changed chief executives. The new executives earned more than their predecessors, probably due to the mushrooming sales volumes of their companies. In all industries the percentage of companies changing chief executives was 42 percent, and unlike business machines the effect of this turnover was to depress over-all compensation levels, since the new presidents were paid at lower scales and the influence of growth was not nearly as dynamic as in business machines.

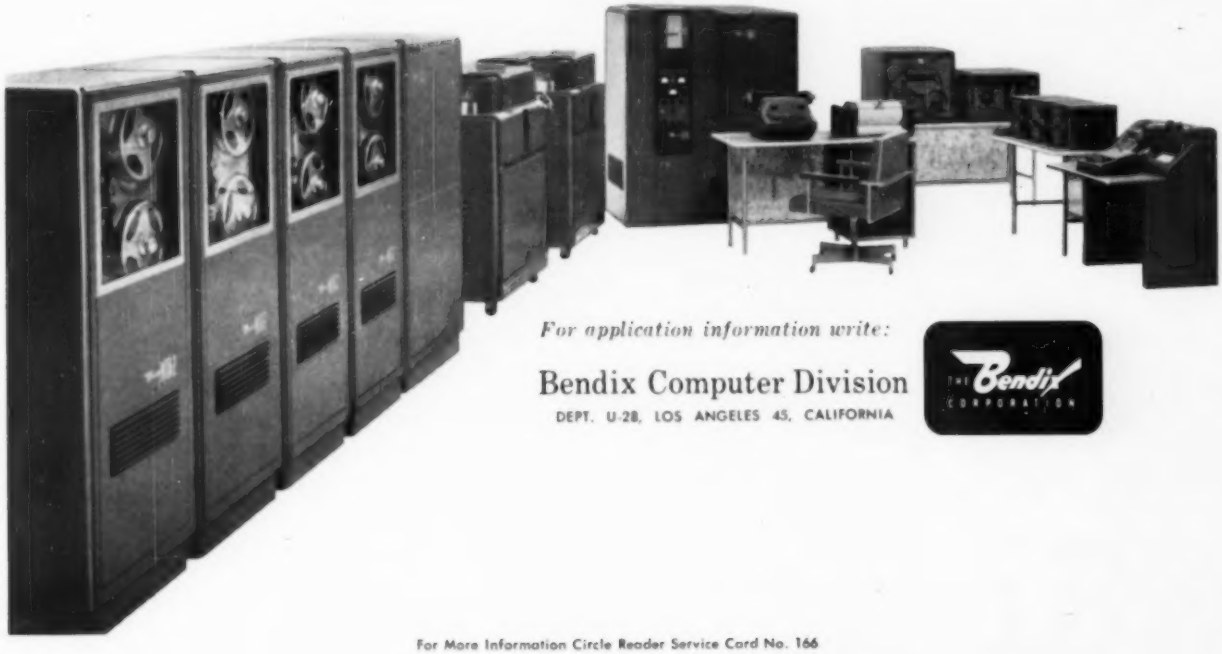
A final aspect of compensation patterns is the relationship of the earnings of the supporting

Continued on Page 40

WITH THE BENDIX
G-15 COMPUTER YOU CAN

START NOW

THERE IS NO NEED TO DELAY that important decision to install a computer. At a low initial investment . . . without adding special personnel or facilities, you can *start now* to provide your firm with the money-saving speed and precision of proven electronic computation. ● And you can inaugurate your computer program with the foreknowledge that the G-15 can be easily expanded, easily adapted to your computational growth . . . without re-programming, without awkward modifications. You know from the beginning that your G-15 will be able to easily assimilate the full range of input-output devices—paper tape, punched cards and magnetic tape, in addition to special code conversion, printing and graphic output units . . . all proven in a wide variety of applications. Simplified, minimum-cost application expansion is made possible by an extensive library of Bendix routines and automatic programming systems. ● Thus, with equal efficiency, the G-15 has served a one-man company and corporations of many thousands. More important, that one-man company has grown to a team of 47—still economically served by an enlarged G-15 system. ● These facts point to the practical economy and ease of initiating your data processing program . . . moving from a low cost basic G-15 computer to a powerful, integrated medium-scale system, capable of spanning the full range of scientific and commercial applications. They make clear that there is a G-15 system to match your data processing requirements . . . *starting now.*



For application information write:

Bendix Computer Division
DEPT. U-28, LOS ANGELES 45, CALIFORNIA

THE Bendix CORPORATION

For More Information Circle Reader Service Card No. 166

Compensation of Second Echelon Executives As a Percentage of Chief Executive's Earnings

	1953 All Industries	1959 All Industries	1953 Business Machines	1959 Business Machines
Second Highest Paid Executive	72%	72%	75%	64%
Third Highest Paid Executive	58	60	57	52
Fourth Highest Paid Executive	54	55	45	39

CHART 3

Percent Change in Chief Executives' Compensation, Sales and Profits In 25 Industries—1953-1959

Industries	Salaries	Sales	Profits
Air Transport	30%	98%	21%
Aircraft and Missiles	23	34	—18
Automotive	2	33	37
Building Materials	24	62	84
BUSINESS MACHINES	**41**	**132**	**172**
Chemicals	13	54	71
Consumer Durables (except auto)	—2	30	69
Department Stores, Gen. Merchandise Chains	10	24	37
Electrical Equipment	11	48	107
Electronics	29	74	11
Food	13	56	19
Food and Drug Chains	10	54	118
Industrial Metal Products	14	44	42
Large Diversified Companies	46	103	43
Machinery (except electrical)	11	15	23
Nonferrous Metals	26	26	21
Paper	23	112	34
Petroleum	26	47	19
Public Utilities	28	60	65
Railroads	18	—7	—37
Rubber	7	61	33
Soap, Cosmetics, Pharmaceuticals	16	90	118
Steel	7	12	11
Textiles	—10	38	24
Tobacco	25	43	95
ALL INDUSTRIES	**16%**	**43%**	**31%**

CHART 4

Survey

Continued from Page 38

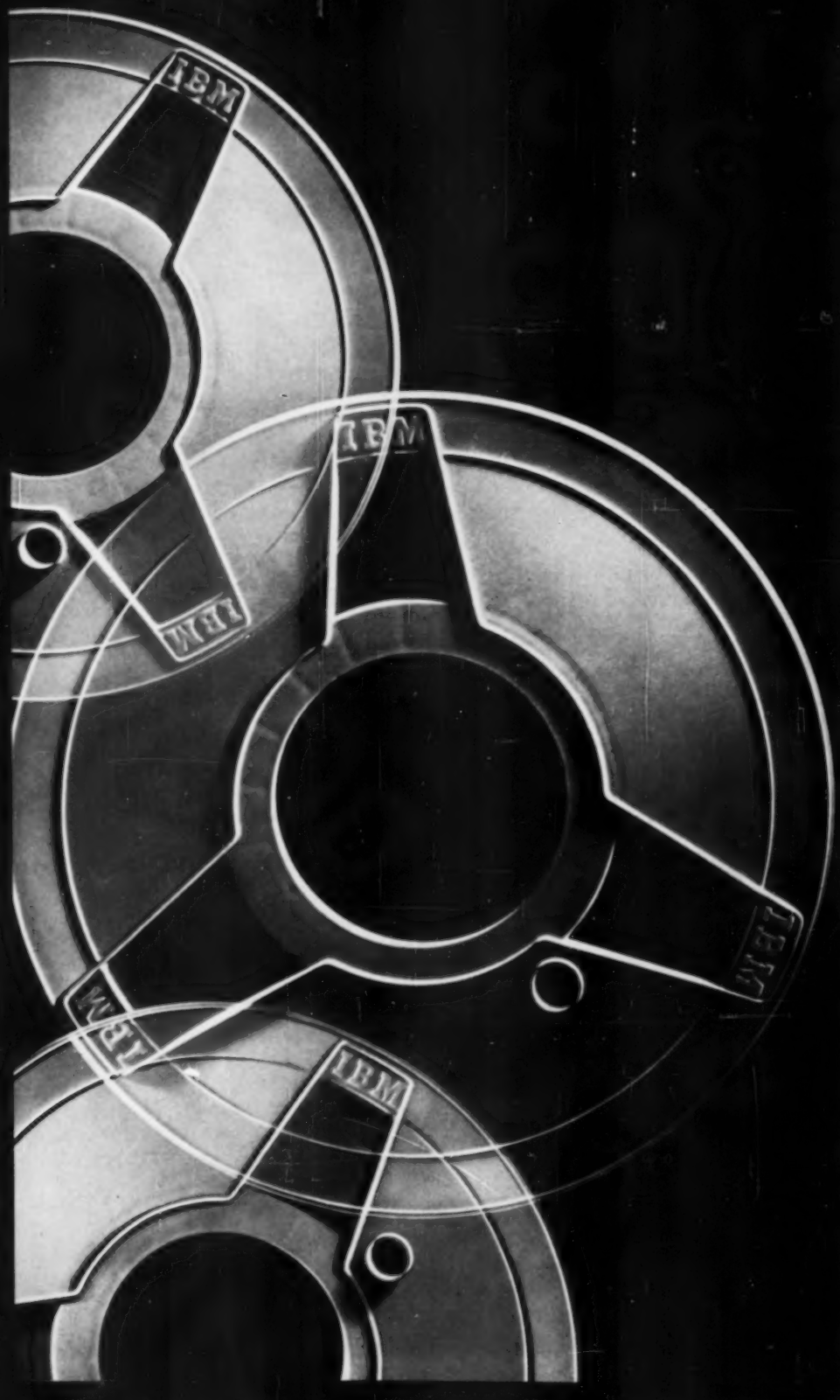
members of the top management team to those of the chief executive. While the percentage relationships have held quite steady for all industries from 1953 to 1959, there has been a noticeable drop in business machines (Chart 4). The higher-than-average increase in the compensation of the chief executive probably accounts for the greatest part of this relative decline. Despite the decline, business machines second, third and fourth echelon executives tend to receive higher dollar compensation than their all-industry counterparts—the result of the unusually high $131,000 average compensation for their chiefs.

It is quite apparent from this six year comparison that the period has been a momentous one for the business machines industry. Its surging growth has obviously reflected itself in top management compensation. Business machines has been, and continues to be, one of the highest paying industries in the country.■

next month . . .

Effects of Business Automation on American Industry in the '60's. A revealing article based on MBA's annual round table conducted in conjunction with The Business Equipment Exhibition.

Also . . . The Johnson Wax EDP Story.



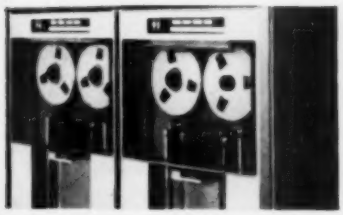
A new life for old tape ...through IBM service

IBM offers a unique customer service: RECLAIMING OF USED IBM MAGNETIC TAPE. At a nominal charge, this service provides for complete testing of a reel of tape and removal of all nonpermanent defects accumulated during use. Where it is not possible to reclaim the entire reel of tape, we will—at no extra cost—remove the longest perfect section and return it to you.

Of the thousands of reels of tape tested during the past two years, *over 50% were returned to the customer intact, completely free of contamination ... ready for a new life of service.* Of the remaining reels tested, many were returned to the customer with long sections of perfect tape.

The very concept of reclaiming used tape stems from the confidence we have in the quality of our Magnetic Tapes. We know the quality is there because we have never taken for granted either the accuracy or the durability of our Magnetic Tapes. Every bit ... of every inch ... of every reel ... of IBM Magnetic Tape ... is tested for perfection. We leave no margin for error—nor should you—for the cost of reliable tape is insignificant when you consider the savings which result from its use.

Your local IBM Sales Representative will explain how you can save by using tested and *retested* IBM Magnetic Tapes ... and how, in many other ways, IBM helps you to enjoy Balanced Data Processing.



IBM®

DATA PROCESSING

An MBA
Product Preview

A standard keyboard and simple controls allow operation of the Electrada Datacom by any typist without specialized training.

Electrada Datacom— Electronic Display Link

Editing is accomplished as the information is transferred from the upper portion of the screen to the lower. Two small horizontal markers indicate transfer position.

DATACOM, an electronic unit which provides a display and control link between the human operator and high speed data processing or communication systems, has been announced by the Electrada Corp.

By matching the logic and speed requirements of electronic systems with those of the human operators, the Datacom increases the flexibility of computers and communication systems. Costly interruptions can be eliminated during monitoring and correcting activities. Datacom accepts digital information at line speed, automatically translates it to alpha-numeric characters and presents a display on a cathode ray tube.

Both incoming and outgoing records are held in the Datacom display until the operator approves or alters the data, in part or in total, by striking a standard typewriter keyboard. The operator then punches the send button, causing the unit to re-translate the information to coded form and transmit it to an associated network or computer. It allows the operators to selectively monitor, correct, edit or re-route data. He may also compose, transmit, receive, correct and expand incoming messages or send messages composed from prerecorded internally stored forms.

The desk size unit is capable of receiving and sending digital data at speeds of up to 3,600 characters per second. The upper part of a cathode ray tube shows the incoming information, while the lower part displays the revised or approved version to be transmitted. A magnetic storage drum with 3,072 bit capacity provides the display memory, storing information for both halves of the screen and holding them ready for editing or transmittal. The Datacom will also display and correct information stored in the computer's own internal memory when linked directly to the computer memory circuits.

Circuit design is flexible to allow incorporation of Datacom in any existing EDP or communications system. Auxiliary devices included: (1) A photographic printer for visual retention of messages; (2) A high speed electronic printer for hard copy retention of messages; (3) A buffer memory to accumulate messages during high activity periods before releasing them; and (4) A Code Sender that allows transmission of short codes in place of long messages.

Specific applications of Datacom will vary. In a data processing system, for example, it allows the operator to; edit incoming or outgoing data, to extract relevant data, to correct content or routing of information and to decide on an unprogrammed course of action. Circle No. 127

$$Re = \frac{20500}{D} \qquad F = 0.1\left[\frac{K_1}{\text{Log } Re} - k_2\right] \qquad \Delta P = \frac{0.135 f L Q^2}{D^5}$$

The equations:

.....

ALGOL language:

```
RE=20500Q/D;      F=0.1(KI/LOG(RE)-K2);
DP=0.135*F*L*Q**2/D**5
```

Now, with this new high-speed Algebraic Compiler, you can use a concise algebraic notation—the natural language of problem solving—to formulate problems for solution on the Burroughs electronic computer systems.

ALGOL*

NOW AT WORK FOR BURROUGHS COMPUTER USERS

High-speed development harnesses **ALGOL** *international language, reduces programming time, speeds results*

Already in operation at a large number of Burroughs electronic computer installations, the new Algebraic Compiler features high translation speeds of 500 machine-language instructions per minute on the average, and extensive, built-in diagnostic facilities and symbolic debugging aids. Rudiments of this automatic programming system can be mastered in a few hours. (Note the straightforward quality of the ALGOL statement of the equations for computing head loss in a specific piping problem.)

Other features of the Burroughs Algebraic Compiler: one-pass operation; semi-automatic segmentation; powerful indexing ability; comprehensive means for communicating with external equipment and with sub-programs, including independent, self-contained procedures; and extensive switching, decision-making and editing facilities.

Take advantage of the important savings in programming time, in effort and in problem-solving costs inherent in the Compiler. For full information, call our nearby branch, or write Burroughs Corporation, Detroit 32, Michigan. Burroughs—TM.

*algorithmic language

Burroughs Corporation

"NEW DIMENSIONS / in electronics and data processing systems"

For More Information Circle Reader Service Card No. 167

IBM's expanded 1410 system extends the range of intermediate computers for commercial data processing.

IBM 1410—Powerful, Intermediate Computer

An MBA Product Preview

A NEW and powerful intermediate computer —the IBM 1410—augments the previously announced 1401, to complete the 1400 "family" of solid-state computers with a wide range of commercial processing abilities. International Business Machines Corp. states that this compatible machine group shares many of the same "building block" units, including new disk storage and input/output devices. When greater speed and memory capacity are needed, transition from the 1401 to a 1410 can be made with a minimum of systems development costs.

The 1410, as well as the 1401, are each available in four basic models; card, tape, Ramac and Ramac/tape. The primary difference between the two systems is the 1410 has approximately two-and-one-half times the internal speed and maximum core memory capacity of the 1401. Its central processing unit can have either 10, 20 or 40 thousand positions of magnetic core storage at the option of the user, as against the 16,000 positions maximum of the 1401.

The character transfer rate of the 1410 in memory is 4.5 micro-seconds. The system can perform a maximum of 1,800,000 logical decisions, 600,000 additions or substractions, 60,000 multiplications or 40,000 divisions per minute.

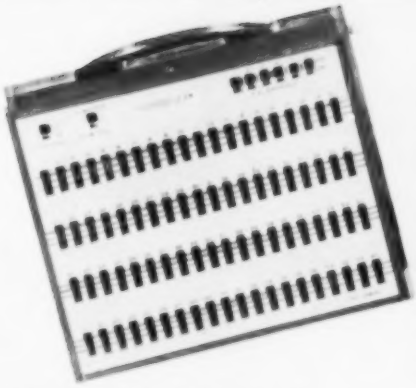
A Ramac 1410 can have as many as five of IBM's new 1405 disk storage units for a maximum storage capacity of 100-million characters.

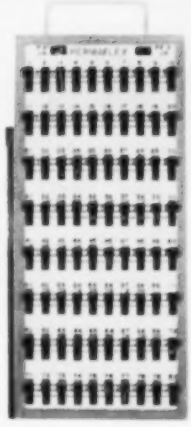
Another special feature of the 1410 is a second data channel on which processing can be carried out independently from operations on a first channel. Synchronizers available with the 1410 make possible complete overlapping of reading, writing and computing.

The new computer is compatible with the IBM 1412 magnetic character reader for automatic bank check processing systems, the recently announced IBM 1418 optical character reader (See MBA, Nov. '60), and IBM Tele-processing equipment. Areas in which the 1400 series might be used include: banking, insurance, manufacturing, government, petroleum and public utilities.

A minimum 1410 card system rents for $5,365 a month and sells for $244,550. At the upper end of the scale, a typical Ramac/tape 1410 system rents for $18,105 and sells for $722,300. Circle No. 128

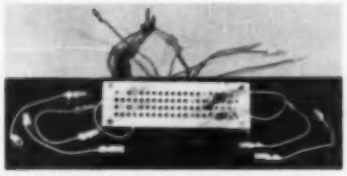
Have you seen these ACTION ACCESSORIES FROM TECH PANEL?





PERMAFLEX PRE-WIRED PANELS, available in types 513, 514 and 519, permit operators to switch operations without touching plug wires. Featuring an exclusive four-position slide switch, they are the **only** permanently-wired panels that let operator reproduce and compare into blank or pre-punched cards, or gang punch or intersperse gang punch and compare. Price $295.00 each. Specify type.

DIAL SWITCH, with 11 positions, makes it possible to change dates and similar functions by dialing. Mounts directly on panel covers to facilitate wiring changes to complex panels. Price $7.50 each.



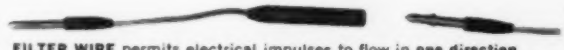
SELF-CONTACTING, PIGGY-BACK — 80 hubs available for all types of machine functions requiring alterations may be controlled by external flexible wiring without removing the cover. Fits all self-contacting covers. Price $25.00 each installed in **your** cover.

ALTERATION SWITCHES for rapid set-up of changes. Panel switch (right) used on panels without covers is plugged into unused hubs by two dead prongs. Cover switch (left) for fixed panels, mounts on the cover. Both switches are pluggable with self-contacting wires of any length making them usable on any size panel. Price $3.50 each. Specify type.

CONTINUITY TESTER for checking wiring locations on heavily wired panels. Spring clip is attached from the back of the panel to the known wire end and the probe is used to test for the opposite end. Price: $2.50 each.

CARD MARKER for card punch and verifying machines makes it possible to detect the source of "off punched" cards and operator errors. Attached to the card hopper mechanism cover it marks cards in one of 20 columnar positions. More units can be identified if various colored refills are used. Prices: 1 to 5, $10.00 each; 6 to 10, $9.25 each; 11 and up, $8.75 ea.

Now, from TECH Panel, come *new* time and labor saving accessories. These job-tested units were designed to make your data processing assignments easier to accomplish. They're built to the same high quality standards as TECH control panels to assure you of dependable, accurate operation *every time!* Contact your TECH Panel Dealer for all these accessories. He also has a complete stock of control panels available for immediate shipment. Contact him today or call Binghamton, N. Y., RAymond 3-8232 for expedited service.



FILTER WIRE permits electrical impulses to flow in **one direction only!** Small in size, having either a manual or fixed self-contacting terminal at one end, it takes no more room than a standard wire. Price $20.00 per dozen.

TECH PANEL
COMPANY INC.
37 MILFORD STREET
BINGHAMTON, N. Y.

WRITE FOR FULL INFORMATION

Tech Panel Company Inc., 37 Milford St., Binghamton, N. Y.

Please send me data on Tech accessories and the name of nearest Tech Dealer.

NAME _____

COMPANY _____

ADDRESS _____

CITY _____ **ZONE** _____ **STATE** _____

For More Information Circle Reader Service Card No. 168

NCR's Class 315 computer is modularly designed to fit specific applications and has automatic program interruption.

An MBA Product Preview

Two NCR Electronic Banking Systems

The controller-computer (310) used with a magnetic character sorter reader and Automated Post-Tronic fully automates bank paper handling.

NATIONAL Cash Register Co. announces two new electronic products aimed at speeding the paperwork job in banks—the National 315 computer and the 310 controller-computer.

Low cost and expansibility were termed the two outstanding features of the 315 computer system. Built-in modular style of the 315 can be easily expanded in size as the bank's operations grow. By adding units, the 315's memory capacity can be increased 20 times—from 6,000 to 120,000. The equipment is able to control the operation of up to four magnetic character sorter-readers and to automatically direct the sorting of checks, at speeds up to 180,000 per hour.

A system of "buffers" makes it possible for the 315 to perform several different operations at once. The 315 data processor also includes a high speed printing mechanism, called a multiple lister, which enables the equipment to prepare some bank documents faster and to print three different documents at once, each with different spacing.

The NCR 310 desk size controller-computer automatically creates a punched paper tape record of the account number, amount and transaction code of checks and deposits, while these documents are being processed by the sorter. It also simultaneously checks the accuracy of this information. The equipment reads entire account numbers.

Designed for medium and large size banks, a basic 315 computer system will rent for less than $8,000 a month, and is capable of automating a bank's full record-keeping job.

The 310, which rents for about $2,450 a month, was developed to automate the sorting, listing and posting of checks in conjunction with the Pitney-Bowes-National sorter-reader used with National's Automated Post-Tronic. Circle No. 129

Start with the best pictures

and the rest is easy!

Refer to any drawing in seconds
with the RECORDAK Film Reader

RECORDAK

(Subsidiary of Eastman Kodak Company)

originator of modern microfilming
—now in its 33rd year

IN CANADA contact Recordak of Canada Ltd., Toronto

RECORDAK Precision Microfilming more than meets DOD requirements of 120 lines per mm resolution at 30 to 1 reduction ratio!

Your drawings, blueprints, and intermediates—negatives or positives—are reproduced as needle-sharp images with remarkably uniform backgrounds on low-cost 35mm film. Mounting these superb reproductions on aperture cards gives you a drawing file that's as dependable as it is automated!

Makes reference easier! Your microfilms when viewed in RECORDAK Film Reader are sharp and clear from top to bottom, side to side. Even the smallest detail is easy to see!

Makes "printmaking" easier! These superior microfilm pictures also assure sharp and clear enlargement prints. They can be made directly from aperture cards by low-cost photographic, xerographic, or electrostatic methods. Duplicate "microfilm" cards for branches, vendors, government agencies can also be made for pennies apiece.

Free booklet gives more details on RECORDAK Precision Microfilming System available through Recordak and its nation-wide dealer organization.

MAIL COUPON TODAY

RECORDAK CORPORATION SS-12
415 Madison Ave., New York 17, N.Y.
Gentlemen: Send free booklet describing new RECORDAK Engineering Drawing System. No obligation whatsoever.

Name_____

Company_____

Position_____

Address_____

City_____ Zone_____ State_____

For More Information Circle Reader Service Card No. 169

MBA Showcase

New Products for Business Automation

Tape Verifier-Duplicator

Punched paper tape can be verified and duplicated, in any code structure, with this new, compact unit. The instrument, Model 1429, is said by the manufacturer, Talley Register Corp., to be low in cost and can be used in conjunction with Tally punched tape readers and perforators. It automatically duplicates and verifies error free tapes in one operation. Duplication and/or verification can take place on five to eight channel tapes, in any code, at the rate of 60 characters per second. An automatic stop will not permit an error character to be punched, but instead displays the character in neon indicators which simulate bits and allow the character to be corrected. Circle No. 101

Multiple Line Headliner

An addition to the Headliner Photo-Composition Machine line, Model 840, is announced by the VariTyper Corp. This new model is capable of delivering finished type proofs in smudge-proof, permanent copies up to three lines in length. Operating on the principle of photo composition, the machine utilizes 35 MM paper or film as the finished proof medium, creating sharp images that can be clearly enlarged up to 15 diameters. Headlines may be created for records, reports, files, charts or graphs by setting the character dial. The process of exposure, developing, washing and fixing is done in a self-contained, automatic operation. Circle No. 107

Microfilm Reader-Printer

A new microfilm Reader-Printer employing a photographic process that will recapture an enlarged print from even poor source documents under ordinary lighting conditions is announced by Documat, Inc. The new device can be used by anyone in the office and fits on an office desk. It can be used to consult microfilmed documents and reproduce true photographic enlargements simultaneously with no extra motions required. It delivers a cut sheet that eliminates tear-off operation. Circle No. 104

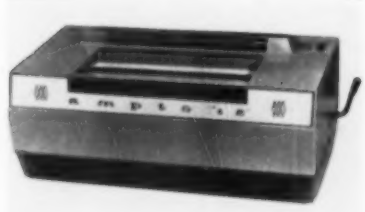
Transistorized Office Dictation Equipment

Entry into the dictation equipment industry is announced by International Business Machines Corp. The new product line is called the IBM "Executary" dictation equipment. All products are fully transistorized, and recording is done on a magnetic belt which holds up to 14 minutes of recording. The belt may be reused many times through an automatic erasure feature, and it can be mailed, filed or stored easily. Unlimited review of dictated material gives the executive "error-free" dictation, eliminating costly misunderstandings. Three new models are available. The Executive Unit, Model 211, features a remote control microphone that has a dictate lock, unlimited review in measured sequences, marks the ends of letters and marks special instructions. The unit has instant scanning of belts, fine-line tuning control and volume controls. Gray is the standard color for the front panel, but optional color panels are available. The Secretarial Unit, Model 212, features instant stop-start with automatic back space of two or four words. It has a single pedal with dual action foot control, as well as review by means of rapid rewind, full range speed, tone and volume controls, fine-line tuning, visible indexing, yellow and red index panels, instant scanning, choice of earsets, and six-second built-in erase magnet. The Model 312 is a Combination Dictation and Transcribing unit having features of both other models. Circle No. 119

Check Protector-Pen

The Registrar is a device for drawing and protecting checks from fraudulent alteration. Introduced by Hamilton-Pax, Inc., it consists of a ball point pen with a roller attachment at one end for perforating the written amount and/or signature of the check. Accompanying the pen-roller is a plastic braille-like base plate. It works by writing out a check in the normal way with the pen, inserting the plate under the check and with the points upright, then taking the closed pen, firmly moving the roller along the check where the amount has been written. This pocket-size kit fits into the checkbook. Circle No. 110

Transfer Photocopier



A diffusion transfer photocopier that will make copies up to 12 inches wide by any length has been introduced by Ampto, subsidiary of Anken Chemical & Film Corp. Called the Ampto "12" Photocopier, the device is considered especially suitable for copying ledger and journal sheets, maps, small engineering drawings, double sheets of standard-size magazines and other oversized records and documents. It can be used with any type of diffusion transfer papers, films and new single-sheet copying systems under ordinary lighting conditions. Handling of chemicals is eliminated by automatic solution control. Other specialized uses include preparation of positives for offset platemaking, intermediates for whiteprint and blueprint equipment. Circle No. 106

"AUTOMATABELS...

SO EFFICIENT, SO THRIFTY!"

Start saving up to 10% *right now* with Ever Ready's new pin-feed automatic labels. These amazingly inexpensive "Automatabels" have refashioned automatic labeling and proved a considerable savings for banks, insurance firms, schools, government agencies and virtually every type of business. In three sizes, thrifty "Automatabels" will operate smoothly and effectively in *every* business machine with a pin-feed platen or tractor feed, and in addition, are used extensively in convenient roll form for all platen feed typewriters. "Automatabels" are pressure sensitive and will adhere to almost anything. Their adhesive provides a smooth-as-glass surface when applied to tabulator cards, assuring perfect operation. Ever Ready's 50 years of label experience guarantees the finest quality at quantity prices. Send coupon below today for more detailed information on "Automatabels" and Ever Ready's Label Idea Kit. "Automatabels" come in roll form and fanfolded packs.

EVER READY LABEL CORPORATION
356 Cortlandt Street • Belleville 9, New Jersey
leaders in label printing for almost half a century.

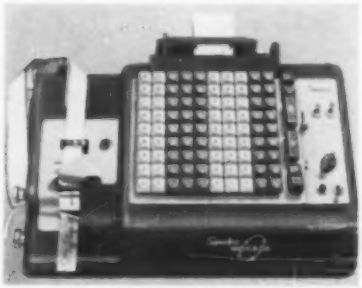
Gentlemen:

☐ Please send me detailed information regarding "Automatabels."
☐ Please send me actual samples of your "Automatabels."
☐ Please send me Ever Ready's Label Idea Kit.

NAME ..... TITLE .....
COMPANY .....
STREET ADDRESS .....
CITY, ZONE, STATE .....

For More Information Circle Reader Service Card No. 170

Tape Adding Machine



A method of making original source data input for data processing in accountancy has been introduced by Monroe Calculating Machine Co., Inc. The Synchro-Monroe Accountants' Program Punch Tape Adding Machine is available in both single-register and duplex models and universalizes source data origination in processing for accountants. It features automatic repetition of all code information, eliminating the need of re-indexing repetitive reference numbers. Accountants' Program keyboard symbols provide clear identification of operating controls. Five excess codes reduce the chance of the machine's obsolescence. Circle No. 102

Phone Dictating Device

The new model Stenorette-TD dictating/transcribing machine of the DeJur-Amsco Corp. features a built-in telephone recording device that enables the user to record telephone conversations by pressing a button without removing the microphone. In addition to the regular push-button controls, other new innovations include: an unrestricted backspace for quick review of dictated material that is controlled directly from the microphone; new record and playback selector controls; and a new recording indicator scale to furnish a more accurate indication of letter lengths. Circle No. 111

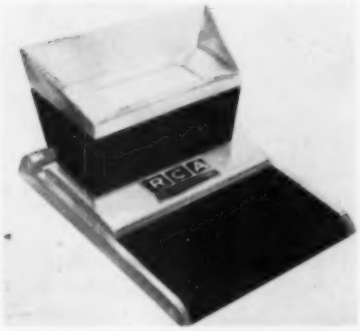
Copier-Projector Visual Communications System

A new visual communications system—which combines, for the first time, the use of a copying machine and an overhead projector—enables a plastic transparency to be made from almost any document in less than 10 seconds in normal light, and project it almost immediately in a fully-lighted room. According to Minnesota Mining and Mfg. Co., the "Thermo-Fax" brand visual communications system involves no special operator training or complicated developing processes and aids presentation of speeches, reports and group instruction. Three elements are employed in the system: (1) "Thermo-Fax" projection transparencies—8½ by 11 inch plastic sheets which make reproductions of original documents in positive, negative or colored form for projection. (2) Any "Thermo-Fax" copying machine in which dry transparencies can be made. (3) A new "Thermo-Fax" overhead projector for communication of the transparencies. Circle No. 118

Accessory Units For Verifax Copiers

Special accessory units to be used with Verifax Copiers have been introduced by Eastman Kodak Co. and will make the machine a means of simplifying multiple-item lists, such as parts and price lists and production orders. New to the Verifax system is a Tabulating Card Shingling Unit (shown above), which will fan out 34 tab cards containing one line of written information at the top or bottom, or hold 17 cards which contain three lines of written information, and copy them on a single sheet of paper in the Verifax Signet Copier. Another new accessory is the Verifax Card Grip, a metal steel clamp in which requisition cards can be inserted to build a column of fixed information for purchase orders. Circle No. 116

Scrambling System



A scrambling device, known as SignaGuard, makes it virtually impossible to forge passbook signatures in the withdrawal of savings bank deposits and, at the same time, reduces customer waiting time at tellers' windows. Announced by the Radio Corporation of America, the SignaGuard Encoder (top) requires one minute to reproduce a passbook signature as an unrecognizable mass of broken lines. When the passbook is presented at the teller's window, the SignaGuard Decoder (bottom) returns signature to its original appearance for comparison with the customer's signature on the withdrawal slip. Banks are expected to find the device useful in conjunction with electronic data processing systems situated in main offices. The system would eliminate the need for duplicate records of signature and account status in bank branch offices by doing away with time-consuming withdrawal checking procedures. It can also be employed in identification cards for commercial band depositors, for retail credit cards and in-plant security. Incorporating fibre optics—glass tubes that carry light and images around bends and corners — a SignaGuard tube picks up a small segment of the signature and transmits it to the tube by a devious route. This scatters signature segments throughout the unintelligible mass that is imprinted on sensitized paper. Circle No. 114

THERM-O-SEAL
Continuous
Tabulating
Forms

ARE FUSED
a new
way
to
SAVE YOU
MONEY

Now! THERM-O-SEAL continuous and tabulating forms, featuring economical carbon construction, save you substantial time and money. With parts fused together at detachable margins for trouble-free operations, THERM-O-SEAL forms assure you of complete form flexibility. Non-slip, non-jam operation. No paste! No crimp! No staples! THERM-O-SEAL 2 to 6-part forms provide *all* needed copies in continuous unit sets for top efficiency performance. Telephone your Baltimore Business Forms Representative today or write us at the address below for free samples.

Baltimore Business Forms
3126 Frederick Avenue, Baltimore 29, Maryland

For More Information Circle Reader Service Card No. 171

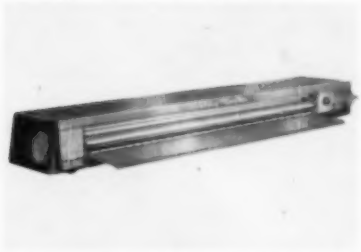
Electronic Inquiry for High-Speed Readout

An electronic inquiry station, the Videograph Display Console, which will display readable alphanumeric characters after converting them from digital signals provided by computer, punched cards, paper or magnetic tapes, was announced by A. B. Dick Co. Described as a high-speed electronic readout method which can speed up the tempo of business operations, the unit will permit branch offices, regional warehouses or remote plant facilities to interrogate a central computer located miles away or in a distant city by way of telephone lines or Bell Systems Dataphone service. The system will provide rapid access to inventory and production control data for industry, account balance information for banks, flight arrival and departure for airlines and for many other "fast look-up" applications. Circle No. 121

High-Speed Data Transmission By Telephone System

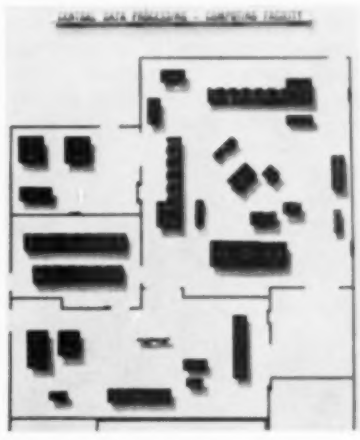
Completion of a new electronic system which transmits data over the regular telephone network at a speed of 1,500 words per minute is announced by Digitronics Corp. The Dial-o-verter System was created to function with the Bell System DataPhone 200 and can bring information from plants to data processing centers, or from office to office by dialing in on a regular telephone line. It checks the line for transmission, before it permits data to be sent. Designed to assure accuracy of data transmission the system features error reporting, error retransmission options and double parity. Flexibility of the system permits it to read or write data via punched paper tape, punched cards or magnetic tape. It can transmit data in one medium at one point, and have it received in another medium at another point. Lower cost night transmission is effected because the system requires no personnel to attend remote stations. Circle No. 117

Compact Whiteprinter



A compact table or wall-mounted 44-inch whiteprinter for offices, architects or engineers' use has been newly designed by Copymation, Inc. This whiteprinter has a variable printing speed range of up to 10 feet per minute, controlled by a single knob with full reverse feature. A wide feed table simplifies print feed and return. A novel concept in printing developing is also introduced with this machine — a horizontally mounted self-sealing chamber which processes several prints simultaneously. Housed in 18 gauge steel the copier's dimensions are $6\frac{1}{4}$ inches by $9\frac{1}{4}$ inches by $58\frac{1}{2}$ inches and weighs 80 pounds. Circle No. 108

Two-Dimension Layout



Visual controls for data processing installation planning and layout, with magnetic, vertically mounted, two-dimension models and control board are available from Methods Research Corp. The Magnetic Control Board method of visual planning can be adapted to several applications: planning new buildings and facilities; renovating plans of offices, factories or institutions; layout planning for printed circuits; or controlling maintenance operations. Circle No. 115

Copies On Request

"All Panels Are Not the Same"—is a free booklet from MAC Panel Co. Designed to assist management in understanding the use of control panels. Circle No. 131

Converter Solves a Problem — A brochure from Digitronics describes how Merrill, Lynch, Pierce, Fenner & Smith converts magnetic tape directly to five-hole teletype tape. Circle No. 132

G-15 Compiler Manual—A self-teaching manual which details the Bendix Corp. G-15 ALGO compiler. It sets forth the procedures for the representation of numerical data and control statements. Circle No. 133

File and Find It Manual—Smead Mfg. Co. has compiled a booklet giving practical pointers on recommended filing and finding procedures. Circle No. 134

The Cost of Carbon Copies—A new carbon cost comparison brochure, "How Much Do Your Carbon Copies Really Cost?" is available from the Port Huron Sulphite & Paper Co. Circle No. 135

The pb250 Computer—A new brochure describes Packard Bell's new general purpose digital computer. The command repertoire and complete specifications are included. Circle No. 136

Panel Accessories—The Tech Panel Co. is offering a new brochure covering their accessory line. Such units as "Piggy Back," Dial Switch and Card Marker are described and priced. An order form is enclosed. Circle No. 137

The "Dial-o-verter" System — A new brochure describes the use of the Digitronics Corp. system in conjunction with the Bell System's Data-Phone 200. Equipment reads and writes data on punched tape, punched cards or magnetic tape, as it is sent over telephone lines. Circle No. 138

OUR STRICT ATTENTION TO CARBON PAPER CAN HELP YOU DO A BETTER JOB IN THE TAB ROOM

HERE'S HOW...

You can forget carbon paper problems when you use GC Data Processing Forms because we have already done the worrying for you. With our large, always-fresh stock to choose from, you can always have exactly the *right* carbon for the specific data processing function you have in mind.

We know all about the various types of carbon paper and how to interleave them in perfect register with printed forms. One of our specialties is working with area-coated carbon similar to the two rolls illustrated. (It's just one technique you may wish to use to block out confidential information on carbon copies.)

Carbon selection is never left to chance in GC Forms. Variety, intensity, color, weight — all are chosen by specialists to fit *your* specific needs. The same goes for methods of fastening and carbon extraction — for perforation and punching. GC Forms are truly custom-built to help you do a better job in the tab room.

Write us today for the name of the GC representative nearest you.

DATA PROCESSING FORMS®

Manufactured by:
CLARKSON PRESS INC.
189 Van Rensselaer St., Buffalo 10, N.Y.
A Subsidiary of
GRAPHIC CONTROLS CORPORATION

For More Information Circle Reader Service Card No. 172

NEWS

Project Turnkey Opens Its Doors

Eleven giant letter sorters such as these can each handle an hourly total of 18,000 pieces of mail. They were built by Intelex Systems Corp.

Project Turnkey (MBA, Dec. '59), the first automated post office in the United States, officially opened its doors to the public on October 20.

Turnkey, designed and built by Intelex Systems, Inc., a subsidiary of International Telephone and Telegraph Co., is a pilot operation for the U. S. Post Office in its search for the answer to handling a staggering volume of mail.

It incorporates the latest in mail handling machines and methods including the giant sorters pictured above. These units have six operator positions, and each operator can handle 50 letters per minute, sending them to any of 300 destination boxes. There are 11 of these sorters in the building, each capable of sorting 18,000 pieces of mail an hour.

Six new facer-cancellers will face all letters and cards in the proper position with the stamp down for cancellation. These units handle letters at the rate of eight per second.

Parcel post sorters, several conveyor systems and a central control tower which includes consoles and monitoring devices, make up the new mail handling prototype.

MBA Publishers Buy Automation Consultants

The Office Appliance Company, publishers of MANAGEMENT and BUSINESS AUTOMATION, has announced the purchase of Automation Consultants, Inc., publishers of Office Automation, Office Automation News Bulletin and the Office Automation Applications looseleaf handbook services, effective January 1, 1961.

R. Hunt Brown, president of Automation Consultants, will become Contributing Editor on the MBA staff and will continue his affiliation with Automation Consultants.

The application handbooks now published include Banking, Distribution, Government, Insurance, Manufacturing, Operations Research and Utilities, all with updating services.

Continental Assurance Installs $1½ Million EDP System

Continental Assurance Co. of Chicago is the first in its industry to have a completely integrated automation program. Joseph W. Glynn, vice president and comptroller, explained that the new IBM 705 system has taken over clerical tasks of maintaining some 400,000 policies involving over 2 million punched cards. Shown with Mr. Glynn, at left, is Albert Lambert, director of data processing (seated at the console) and S. Charles Corte, assistant comptroller.

Bright Is Chairman Of OEMI X3 Committee

H. S. Bright

The Office Equipment Manufacturers Institute has announced the appointment of Herbert S. Bright as director of engineering activities at the New York offices of its data processing group.

In his capacity, Mr. Bright will be chairman of the OEMI sponsored American Standards Association Sectional Committee (X3) on Data Processing Machines, which includes digital computers. (MBA, Nov. '60)

NOMA Names Harvey To X4 Committee

Mayo A. Harvey has been named as the National Office Management Association representative to the newly organized Sectional Committee of the American Standards Association (X4) responsible for developing American office machines standards.

Smith-Corona Marchant To Market DP Products

Emerson E. Mead, newly elected president of Smith-Corona Marchant, Inc., told his company's stockholders that SCM was entering the data processing field with two new products.

The new units, still to be introduced, are the Typetronic 2215, a document preparations system, and the Typetronic 6615, a calculating typewriter.

RCA Opens EDP Center In Chicago

Radio Corporation of America opened its Chicago electronic data processing center in October, the fourth new facility in a chain which will eventually span the nation.

The Chicago center, which is built around the RCA 501 system, was put to work even before its dedication ceremonies on a "crash" program for the Social Security Administration. Personnel at the center are converting about 8 million punched cards to magnetic tape.

Lawyers Explore Computer's Role in Law

The Law School of the University of California at Los Angeles recently sponsored a national conference to explore the present and future interrelations of law and electronics.

One full session was devoted to discussion of the use of data retrieval systems by the legal profession. Panelists considered the possibilities that legal decisions in the future may be based upon information taken from memory systems.

A single machine that applies all types of address labels?

Wide-strip, narrow-strip, continuous pack form, cut or individual labels! All applied automatically to a wide range of printed pieces at cost-cutting high speeds (up to 16,000 per hour). No matter whether labels are pre-addressed from punched cards, magnetic tapes, plates, stencils or other addressing systems. Or whether you mail small postcards and envelopes . . . middle-sized pamphlets and brochures . . . or larger magazines, catalogs and quarter-fold tabloids. All handled by the compact easy-to-operate **Cheshire Model E.**

CHESHIRE INCORPORATED

Write for descriptive brochure.

Dept. MB-12, 1644 N. Honore Street, Chicago 22, Illinois

For More Information Circle Reader Service Card No. 173

LOMA Committee Asks "Standardized Scanning"

A subcommittee on optical scanning of the Life Office Management Association's Automation Committee has called on member companies to design premium billing documents to be processed by a "standardized optical scanner." (MBA, Sept. '60)

At the same time the subcommittee, reporting before the 37th annual meeting of LOMA in Toronto, suggested specifications for the scanner.

These performance requirements were: (1) ability to read a minimum of three and one-half inches of numeric data per line, with sufficient tolerance for recognition of manual code marks and proper reading of data; (2) ability to read a maximum of two lines, preferably in one pass of the documents—for simplicity, agreement could be reached on a reading area; (3) output to be punched cards; (4) ability to identify or select rejected, unread documents, and (5) type font to be spaced 10 characters to the inch.

So automatic and accurate you can start it and walk away!

Freedom from machine tending is only the beginning! The new Gathermatic by Thomas Collators brings to collating the speed and accuracy of larger, more expensive equipment... at a cost unbelievably low. Write today for complete information on the many ways you can speed up your collating operation and substantially reduce your costs.

- Offers more features at a lower price than any other collator of its kind
- Automatic miss and double sheet detectors stop machine instantly, prevent errors
- Stations can be skipped at the flick of a lever without hindering the full production rate
- Loads in a minute... each station takes approximately ½ ream of 3"x5" to 11"x14" sheets in various weights and finishes
- Gives over-all speed, ease and accuracy features formerly available only in large-scale collators
- Automatically collates, counts, crisscrosses or staples 6,000 sheets per hour

Thomas Collators Inc.
World's Leading Manufacturer of Collating Equipment
Dept. GG3, 100 Church Street, New York 7, New York
For More Information Circle Reader Service Card No. 174

MBA's Calendar

December 3-6—International Visual Communications Congress, sponsored by the Society of Reproduction Engineers and the Association of Professional Draftsmen. Sherman Hotel, Chicago. Write: V.C.C., 10600 Puritan Ave., Detroit 37, Mich.

December 13-15—The Eastern Joint Computer Conference (EJCC). New Yorker Hotel, New York City. Contact: Dr. Nathaniel Rochester, IBM, Yorktown Heights, N. Y.

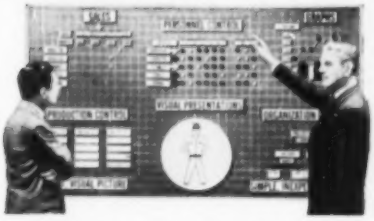
January 9-11—The Seventh National Symposium on Reliability and Quality Control, sponsored by the American Society for Quality Control, the Institute of Radio Engineers, the American Institute of Electrical Engineers and Electronic Industries Association. Bellevue-Stratford Hotel, Philadelphia, Pa. Address inquiry to: Mr. James H. Goodman, RCA, Building 1-2, Camden, New Jersey.

January 16-19—The Instrument Society of America's Winter Instrument-Automation Conference (Sheraton-Jefferson Hotel) and Exhibition (Kiel Auditorium) in St. Louis, Mo. For Information: William H. Kushnick, Executive Director, ISA, 313 Sixth Ave., Pittsburgh 22, Pa.

February 1-3—The Second Winter Military Electronics Convention (MIL-E-CON) sponsored by the National Professional Group on Military Electronics and the Los Angeles Section, Institute of Radio Engineers. Write: IRE Business Office, 1435 S. La Cienega Blvd., Los Angeles 35, Calif.

March 6-8—The first comprehensive American Management Association Data Processing Conference, Statler Hilton Hotel, New York. AMA's seventh annual exhibit will be held in conjunction. AMA, 1515 Broadway, New York 36, N. Y.

VISUAL
MAGNETIC
CONTROL



MAGNETS MOVE FASTEST—AND EASIEST—OF ALL!

SIMPLEST VISUAL CONTROL FOR

Sales • Production • Personnel
Maintenance • Machine Loading • Scheduling
Charts • Visual Presentations • Graphs

COLORFUL MAGNETIC ELEMENTS

ORGANIZE FOR ACTION
SHOW FACTS INSTANTLY
ELIMINATE MISTAKES
GET THE JOB DONE

Priced From
$38.00
Including Magnetic Elements

Price List & Brochure MBA 12
FREE
On Request

REPRESENTATION DESIRED IN SOME AREAS

Methods Research Corp.
105½ WILLOW AVE., STATEN ISLAND 5, N. Y.

Circle Reader Service Card No. 176

Aw . . . have a Heart!

Secretaries love 'em. These special compound erasers excellent for typewriter erasures on Tissue Paper—Carbons, Air Mail and Onion Skin. Also on Soft Surface Bond Letterheads, 25% to 100% Rag 16 lb. to 24 lb. Only a buck a dozen, and THEY ARE GOOD. Send $1.00 today and surprise your Secretary. She'll really thank you. Money back guarantee. Order from:

GARDNER STAMP COMPANY
166 South Washington Street
Wilkes-Barre, Pennsylvania

Circle Reader Service Card No. 175

Ask about
BARKLEY
Open Shelf File Supplies

Open shelf filing is a "must" where space is at a premium for there are no space consuming drawers to be opened. Barkley open shelf file supplies make hundreds of files visible at one time; permit filing higher than eye level; permit using all the valuable floor space, and cost less to operate too. Ask us for complete information.

C. L. BARKLEY & CO.
Founded 1927 • All Phones MOnroe 6-7061
1220 W. VAN BUREN ST. • CHICAGO 7

Circle Reader Service Card No. 180

ADVERTISERS' INDEX—DECEMBER 1960

Acme Visible Records, Inc. 10
Agency—Cargill-Wilson Advertising, Richmond, Va.

Addressograph-Multigraph Corp. 7
Agency—The Griswold-Eshleman Co., Cleveland

Baltimore Business Forms Co. 51
Agency—Van Sant, Dugdale & Co., Inc., Baltimore

C. L. Barkley & Co. 57
Agency—Frank C. Jacobi Advertising, Inc., Chicago

Bendix Computer Division 39
Agency—Shaw Advertising Co., Inc., Los Angeles

Calculagraph Company 11
Agency—Carpenter-Proctor, Newark, New Jersey

Cheshire, Inc. 55
Agency—Robert W. Deitz & Associates, Chicago

Communications Control Corp. 14-15
Agency—Hixson and Jorgensen, Inc., Los Angeles

Dennison Mfg. Co. 16-17
Agency—Grant Advertising, Inc., Boston

ElectroData, Division of Burroughs Corp. 43
Agency—Campbell-Ewald Co., Detroit

Every Ready Label Corp. 49
Agency—The Caples Co., New York City

Farrington Mfg. Co. ..... 2nd Cover
Agency—N. W. Ayer & Son., Inc., Philadelphia

Friden, Inc. 8
Agency—Richard N. Meltzer Advertising, Inc., San Francisco

Gardner Rubber Stamp Co. 57

Graphic Controls Corp. 53
Agency—The Rumrill Co., Inc., Buffalo, N. Y.

Haloid Xerox, Inc. 33
Agency—Hutchins Advertising Co., Inc., Rochester, N. Y.

Allen Hollander Co., Inc. 9
Agency—Harvey Dreyer Associates, New York City

Honeywell Electronic Data Processing Div. 35
Agency—Batten, Barton, Durstine & Osborn, Inc., New York City

International Business Machines Corp. Data Proc. Div. 41
Agency—Benton & Bowles, Inc., New York City

Mac Panel Co. 4
Agency—Lavidge & Davis, Knoxville, Tenn.

Management and Business Automation 6

Methods Research Corp. 57
Agency—Vincent J. Miekcarek, Staten Island, N. Y.

Philco Corp., Gov't & Industrial Group ..... Back Cover
Agency—Maxwell Associates, Inc., Philadelphia

Recordak Corp. 47
Agency—J. Walter Thompson Co., New York City

Remington Rand Div. of Sperry Rand Corp., Systems Div. 3
Agency—Gardner Advertising Co., New York City

Remington Rand, Office Machines Div., Div of Sperry Rand Corp. ..... 3rd Cover
Agency—Gardner Advertising Co., New York City

Tech Panel Co. 29, 45
Agency—Richard LaFond Advertising, Inc., New York City

Thomas Collators Inc. 56
Agency—Douglas Turner, Inc., Newark, N. J.

Virginia Panel Corp. 6
Agency—Houck Advertising, Roanoke, Va.

EDITORIAL

"Educated" Data Processing

If there has been any "standing still" in America it certainly hasn't been in the field of business automation. This year has been a breathtaking one, with a steady succession of new products and new ideas. From electric pencil sharpeners to electronic process control systems, the office equipment manufacturers have brought automation in some shape or size to every segment of American business. There remains now only the need to determine the most efficient methods for putting these remarkable developments to work.

As we see it, the manufacturers have far outdistanced the user in regards to the latter's ability to absorb the many advances made available in 1960. As an example, not a few companies are busily engaged in the selection of a computer system when they have yet to achieve even 50 percent efficiency in their present punched card installation.

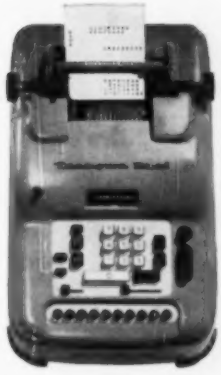
The pressing problem in our industry is still education at all levels of management. The machine accountant needs to recognize that managerial skill, not technical know-how, is the key to his success. The systems man must press forward in the battle to sell systems as a company-wide endeavor, breaking down the barriers that have confined this operation within the walls of the accounting department. And, accountants themselves must obtain a better working knowledge of data processing systems. Their failure to do so has been a major roadblock to successful EDP installations for many years. It is our opinion that a course in data processing techniques should be a required part of every accountant training program. The same can be said of credit managers, who seem to have a peculiar, if not fanatical, aversion to automated methods.

Without a doubt, the greatest need for education still remains at the top management level. There must be better understanding of the true potentials of "total systems" and "management by exception." Executives have to learn that computers, in particular, are not just hybrid accounting machines designed for faster preparation of a payroll or sales statistics. The survival of their company in the competitive years that lie ahead may well depend on their realization of the fact that a computer, using simulation techniques, can project the company's future under any number of varying circumstances.

Perhaps in the coming year the manufacturers should place the emphasis on "educated" data processing rather than on introduction of new electronic developments, giving management a chance to catch its breath—and to really start putting business automation to work.

Tape on an Inventory!

Convincing way to substantiate facts with clearly printed proof



Only a Remington Rand "99" can print a tape like this! It reads from top to bottom as easily as the final inventory sheet based on it . . . date, department, catalogue numbers, total! A tape anyone can understand—today or next year—no matter how complicated the problem. Why? Because the "99's" exclusive Control Key eliminates confusing figures . . . actually makes operation simpler. For complete information call your nearest Remington Rand Office or write Room 120FZ, Remington Rand, 315 Park Avenue South, New York 10, N. Y.

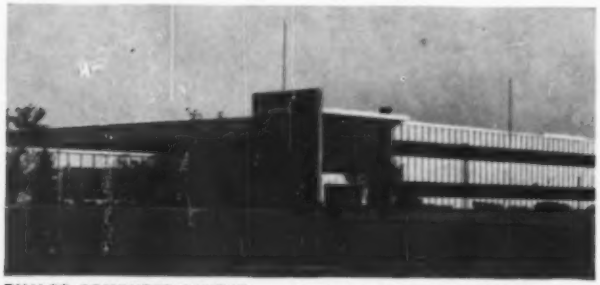
Remington Rand

DIVISION OF SPERRY RAND CORPORATION

For More Information Circle Reader Service Card No. 177

PHILCO 2000 . . THE COMPUTER THAT CHANGED THE INDUSTRY

Leading Defense and Business Organizations report:



PHILCO COMPUTER CENTER . . . devoted exclusively to the development, engineering, production and marketing of Philco Computers

Most Data Processing for their dollar

The Philco 2000 Data Processing System is now in use by many important organizations for business, scientific and military computation. All of these users report extremely low cost per unit of data processed . . . and that's the real measure of computer efficiency and economy. With the world's fastest overall system speed, the Philco 2000 is providing these users with *more data processing for their dollar* than is possible with any other system. Isn't that what *you're* looking for in a computer? A test run of one of your own toughest problems will prove that you'll get more for your money with a Philco 2000. We'll be glad to arrange such a test, without the slightest obligation.

PHILCO®

Famous for Quality the World Over

PHILCO CORPORATION • GOVERNMENT AND INDUSTRIAL GROUP • COMPUTER DIVISION • 3900 WELSH ROAD, WILLOW GROVE, PENNSYLVANIA

For More Information Circle Reader Service Card No. 178